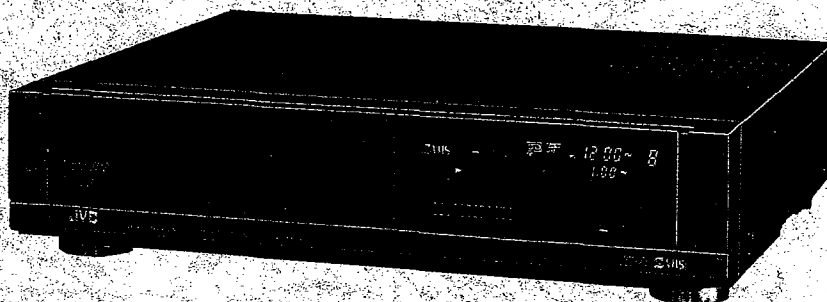
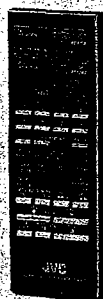


3-565

JVC**SERVICE MANUAL****Hi-Fi STEREO VIDEO CASSETTE RECORDER****HR-S5000U****SPECIFICATIONS**

Format	S-VHS/VHS NTSC standard with Hi-Fi audio	Signal-to-noise ratio	45 dB (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at center position
Video recording system	Rotary, two-head helical scan system with slant double-azimuth combination video heads	Horizontal resolution	More than 400 lines (S-VHS)/240 lines (VHS) with PICTURE SHARPNESS control at center position
Hi-Fi audio recording system	Deep-layer recording system conforming to stereo Hi-Fi VHS standard	Audio	
No. of audio channels	2 Hi-Fi audio channels 1 normal audio channel	Input	-8 dBs, more than 50 k-ohms, unbalanced
Video signal system	NTSC-type color signal and separated Y/C signals conforming to NTSC	Output level	-6 dBs, high impedance load
Tape width	12.65 mm (1/2 inch)	Output impedance	Less than 1 k-ohm, unbalanced
Tape speed	(SP) : 33.35 mm/s (1-5/16 ips) (EP) : 11.12 mm/s (7/16 ips)	Signal-to-noise ratio	More than 40 dB (Normal audio)
Maximum recording time	(SP) : 160 min. with T-160 video cassette (EP) : 480 min. with T-160 video cassette	Frequency range	70 Hz to 10,000 Hz (Normal audio)
Temperature		Hi-Fi audio	
Operating	5°C to 40°C (41°F to 104°F)	Frequency response	20 Hz to 20,000 Hz
Storage	-20°C to 60°C (-4°F to 140°F)	Dynamic range	More than 90 dB
Antenna	75 ohms, unbalanced	Wow and flutter	Less than 0.005 % WRMS
Channel coverage	(VHF) : Channels 2 - 13 (UHF) : Channels 14 - 69 (CATV) : 87 channels	Timer	14-day programmable timer 8 programs with repeat function
RF output signal	Channel 3 or 4 (switchable; preset to channel 3 when shipped) 75 ohms, unbalanced	Dimensions	435 mm (W) x 105 mm (H) x 380 mm (D) (17-3/16" x 4-3/16" x 15")
Power requirement	AC 120 V~, 60 Hz	Weight	8.1 kg (17.9 lbs)
Power consumption	42 W	Provided accessories	Infrared remote control unit "AAA" size battery x 2 S-VIDEO cable (4-pin) Matching transformer Antenna cable (F-type) Audio cable Video cable
Video			
Input	0.5 to 2.0 Vp-p, 75 ohms, unbalanced		
Output	1.0 Vp-p, 75 ohms, unbalanced		

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the  symbol and shaded (■) parts are critical for safety.

Replace only with specified part numbers.

Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.

Caution for continued protection against fire hazard.

Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

- | | | |
|--------------------|--------------------------------------|------------|
| 1) Insulation Tape | 3) Spacers | 5) Barrier |
| 2) PVC tubing | 4) Insulation sheets for transistors | |

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

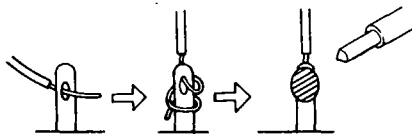


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

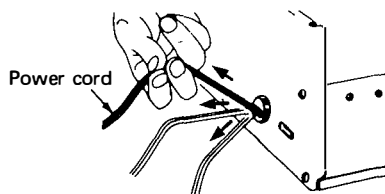


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)

In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector

In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

1) **Connector part number** : E03830-001

2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.

3) **Replacement procedure**

(1) Remove the old connector by cutting the wires at a point close to the connector.

Important : Do not reuse a connector (discard it).

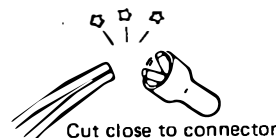


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

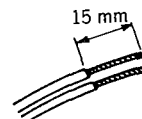


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

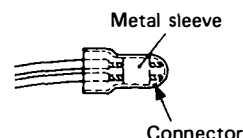


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

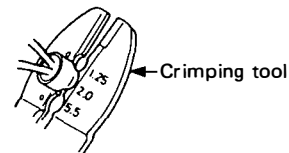


Fig. 6

(5) Check the four points noted in Fig. 7.

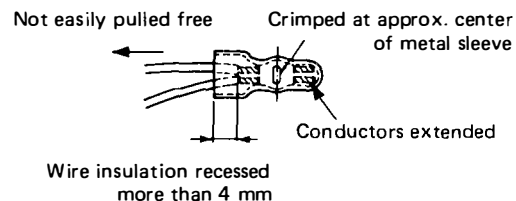


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

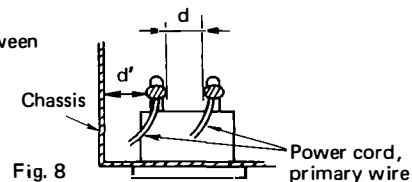
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

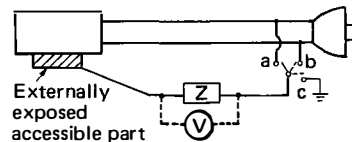


4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

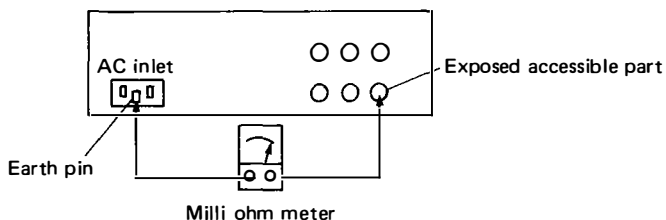


5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega / 500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V	Europe & Australia	$R \geq 10 \text{ M}\Omega / 500 \text{ V DC}$	AC 3 kV 1 minute (Class II)	$d \geq 4 \text{ mm}$
200 to 240 V			AC 1.5 kV 1 minute (Class I)	$d' \geq 8 \text{ mm (Power cord)}$ $d' \geq 6 \text{ mm (Primary wire)}$

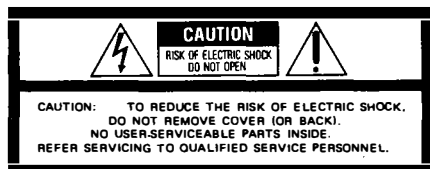
Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan		$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada		$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	Europe & Australia		$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
220 to 240 V			$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This video cassette recorder should be used with AC 120 V~, 60 Hz only.

CAUTION:

To prevent electric shocks and fire hazards, do NOT use any other power source.

CAUTION

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

CAUTION

When you are not using the HR-S5000U for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.



Cassettes marked "S-VHS" and "VHS" can be used with this video cassette recorder. However, S-VHS recordings are possible only with cassettes marked "S-VHS".

Thank you for purchasing the JVC HR-S5000U Super VHS Hi-Fi Stereo Video Cassette Recorder. This unit provides a breath-taking improvement in picture quality, with over 400 lines of picture resolution to double your video enjoyment. True hi-fi stereo complements the HR-S5000U's superb Super VHS pictures.

Before using this video recorder, read this instruction booklet carefully so that you will obtain the best results from your HR-S5000U.

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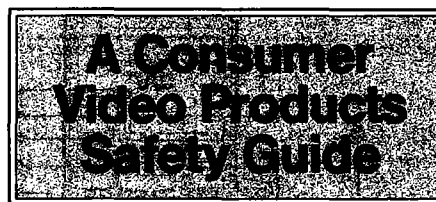
ATTENTION:

Pour prévenir l'électrocution, ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

NOTE: The rating plate and the safety caution are on the rear of the unit.

JVC COMPANY OF AMERICA

Division of US JVC CORP.
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Electrical energy can perform many useful functions. But improper use can result in potential electrical shock or fire hazards. This unit has been engineered and manufactured to assure your personal safety. In order not to defeat the built-in safeguards, observe the following basic rules for its installation, use and servicing.

ATTENTION:

Follow and obey all warnings and instructions marked on your video product and its operating instructions. For your safety, please read all the safety and operating instructions before you operate this unit and keep this brochure and the operating instructions packaged with your video product for future reference.

INSTALLATION

1. Grounding or Polarization

(A) Your video product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.

If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

(B) Your video product may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

2. Power Sources

Operate your unit only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. If your unit is intended to operate from battery power, or other sources, refer to the operating instructions.

3. Overloading

Overloaded power outlets and extension cords are dangerous; so are frayed cords and broken plugs. Any of these may result in a shock or fire hazard. Call your service technician for replacement of such cords and plugs. Extension cords or adaptors that defeat the safety purpose of polarized or 3-wire grounding-type plug power cords should not be used.

4. Power Cord Protection

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

5. Ventilation

Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the unit and to protect it from overheating, these openings must not be blocked or covered.

- Do not block the openings by placing the unit on a bed, sofa, rug or other similar surface.
- Do not place the unit near or over a radiator or heat register.
- Do not place the unit in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

ANTENNA INSTALLATION INSTRUCTIONS

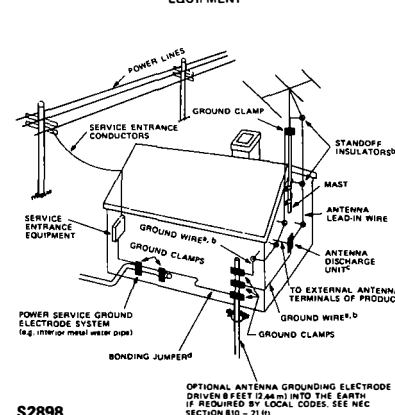
1. Outdoor Antenna Grounding

If an outside antenna or cable system is connected to the video recorder or tuner, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

2. Power Lines

To avoid the possibility of a fatal electrical shock, outdoor antennas and lead-in wires should be kept well away from over-head power lines or other electric light or power circuits, or from where they can fall onto such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 - "RADIO AND TELEVISION EQUIPMENT"



S2898

- a
Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.
- b
Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 – 6 feet (1.22 – 1.83 m) apart.
- c
Mount antenna discharge unit as close as possible to where lead-in enters house.
- d
Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).

USE

1. Accessories

To avoid personal injury:

- Do not place this video product on an unstable cart, stand, tripod, bracket, or table. It may fall, causing serious injury to a child or adult, and serious damage to the appliance.
- Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the video product.
- Use a mounting accessory recommended by the manufacturer and follow the manufacturer's instructions for any mounting of the appliance.
- Do not try to roll a cart with small casters across thresholds or deep-pile carpets.

1A.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



2. Water and Moisture

Do not use this video product near water — for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool and the like.

3. Object and Liquid Entry

Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on this video product.

4. Attachments

Do not use attachments not recommended by the manufacturer of this video product as they may cause hazards.

5. Cleaning

Unplug this video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6. Lightning

For added protection for the video recorder or tuner during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.

SERVICING

1. Servicing

If your video product is not operating correctly or exhibits a marked change in performance and you are unable to restore normal operation by following the detailed procedure in its operating instructions, do not attempt to service it yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

2. Damage Requiring Service

Unplug the video product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the video product.
- If the video product has been exposed to rain or water.
- If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
- If the video product has been dropped or the cabinet has been damaged.
- When the video product exhibits a distinct change in performance — this indicates a need for service.

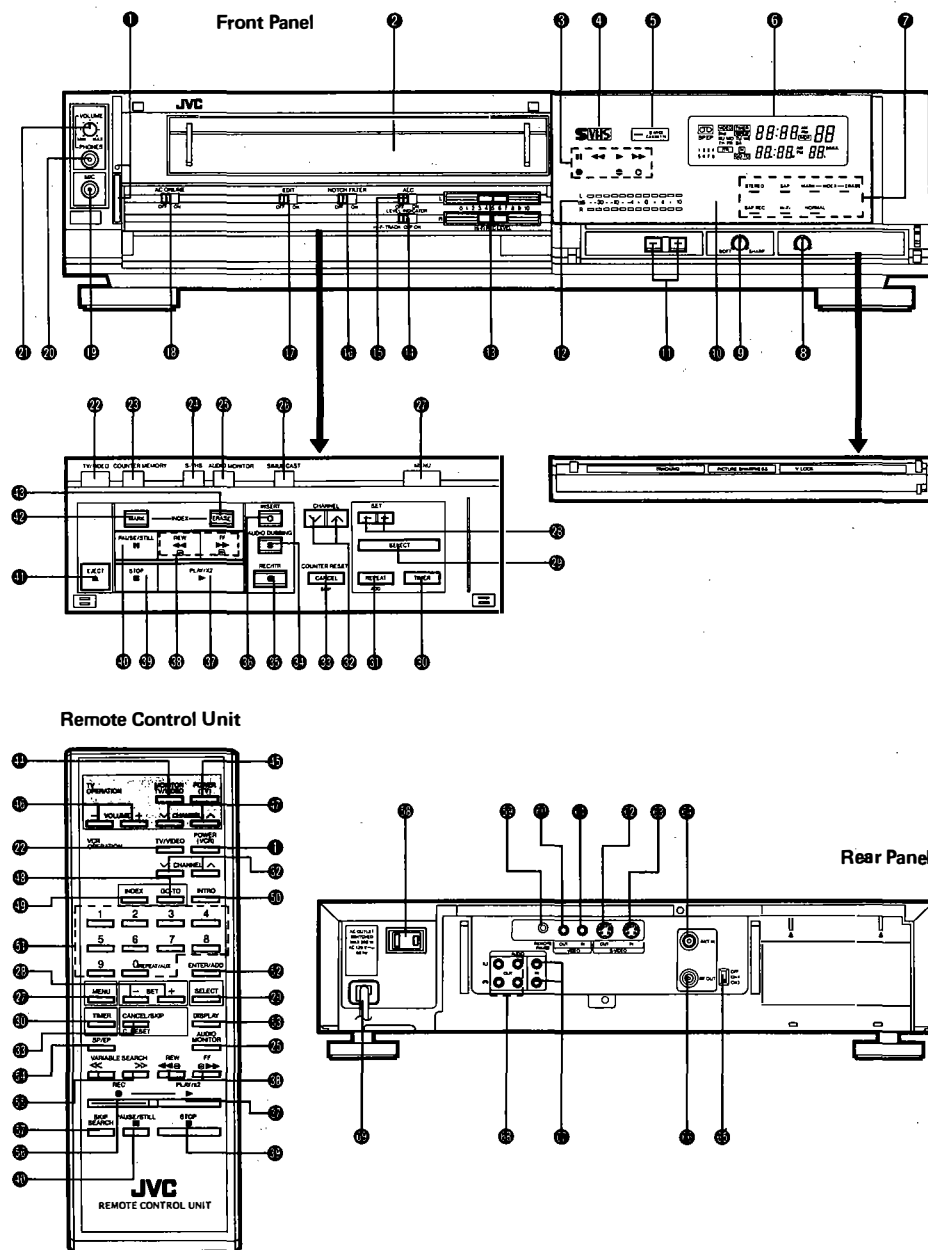
3. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

4. Safety Check

Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in safe operating condition.

GENERAL REFERENCE DIAGRAMS



FEATURES

High-Quality Pictures and Sound

- **Super VHS recording and playback circuitry** ensuring super-quality pictures with a horizontal resolution of more than 400 lines.
- **Separated Y/C signal terminals (S-VIDEO IN and OUT)** for higher-quality dubbing and playback of Super VHS signals.
- **Full set of HQ (High Quality) System circuits** to ensure the best possible pictures in the regular VHS mode.
- **High-performance CCD luminance signal comb filter** for both Super VHS and VHS operation.
- **Super DA-4 head system with Tape-Stabilizing head drum** for superlative picture quality in all modes.
- **Hi-Fi VHS stereo sound with a dynamic range of more than 90 dB.**
- **Advanced switching noise reduction system** which applies switching point compensation independently for each channel.
- **Flying erase head** for professional-class insert edits.
- **Edit switch** for best possible dubs.
- **Picture sharpness control.**

Special-effects playback

- **Noiseless field stills and frame advance** in both SP/EP modes thanks to the Super DA-4 head system.
- **Slow-motion playback at 5 different speeds:** 1/30, 1/24, 1/18, 1/12 and 1/6 normal speed.
- **Variable-speed search** at 3, 5, 7 and 21 (EP) times normal speed in both directions.
- **Double-speed forward playback and normal-speed reverse playback.**
- **Shuttle Search with latch function.**

Remote control features

- **On-Screen Menu selection operation**
 - Channel presetting
 - Timer setting
 - Clock setting
 - Status setting (source, broadcasting band, AFC, recording speed, SAP recording and on-screen mode display function on/off).
- **TV control** for power on/off, volume, channel selection and AV mode (designated JVC TVs only).
- **10-Key random-access channel selection.**

Tuner features

- **Frequency synthesized cable-compatible tuner** pretuned to 155 channels.
- **MTS decoder** built in for recording stereo and SAP programs.
- **Wider bandwidth** for accommodating higher video signal frequencies.

Timer features

- **On-screen remote programming by menu selection.**
- **14-Day/8-event programmable timer.**
- **Selectable daily settings** (Sunday through Saturday, Monday through Saturday, and Monday through Friday) and SP/EP programming.
- **One-button instant timer recording.**

Tape access features

- **Half-loading mechanism** for more tape access convenience.
- **VHS Index Search System** which automatically places index codes at the beginning of any recording, with mark/erase facilities for manual marking of extra index codes during recording and playback, and manual erasing of unnecessary index codes during playback.
- **Automatic location of up to 9 coded programs** by remote-specifying the number of index codes to be skipped. A specified code can be detected in the Shuttle Search, or the faster REW and FF modes (120 times normal EP speed) for automatic playback.
- **Intro search** to play back the beginning of each indexed program for about 5 seconds in fast-motion.
- **Realtime Go-To function** for locating a point on tape a specified time away from the beginning.
- **Realtime Search function** for locating a point on tape a specified time away in either direction from the current position.
- **Counter memory function** for returning to a designated point on tape.
- **Skip search** to skip unwanted tape segments 1/2 to 2 minutes in length.

Other value features

- **Realtime tape counter** showing tape time in hours, minutes and seconds by counting the recorded 30-Hz control signal pulses.
- **Automatic functions** including Auto Play and Next-Function Memory.
- **Automatic on-screen mode display with manual recall capability.**
- **Automatic backspace editing by Zero Frame Editing system** for clean assemble edits.
- **Audio dubbing facility.**
- **Switchable AC outlet.**
- **Two pairs of audio outputs** for more systems flexibility.

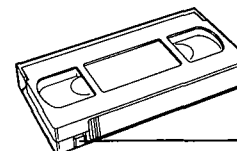
PRECAUTIONS

Handling and storage

- Avoid using the recorder under the following conditions:
 - extremely hot, cold or humid places,
 - dusty places,
 - near appliances generating strong magnetic fields,
 - places subject to vibrations, and
 - poorly ventilated places.
- Be careful of moisture condensation. Avoid using the recorder immediately after moving from a cold place to a warm place. The water vapor in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
 - Do not block the ventilation openings.
 - Do not place anything heavy on the recorder.
 - Do not place anything which might spill and cause trouble on the top cover of the recorder.
 - Use in horizontal (flat) position only.
- In case of transportation,
 - Avoid violent shocks to the recorder during packing and transportation.
 - Before packing, be sure to remove the cassette from the recorder.

Video cassettes

- This recorder employs S-VHS and VHS cassettes only.
 - S-VHS: ST-120 for 120(SP)/360(EP) minutes, ST-60 for 60/180 minutes and ST-30 for 30/90 minutes of recording.
 - VHS: T-160 for 160(SP)/480(EP) minutes, T-120 for 120/360 minutes, T-90 for 90/270 minutes, T-60 for 60/180 minutes and T-30 for 30/90 minutes of recording.
- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



Safety tab

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

Moisture condensation

- If you pour a cold liquid into a glass, water vapor in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions.
- In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the power switched on; this would help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

Operation

- When a cassette is loaded, the power is switched on and, if the safety tab has been removed, playback begins automatically.
- The cassette can be unloaded even when the power is off. Pressing the EJECT button turns the power on and, after ejection of the cassette, shuts it off automatically in this case.
- As long as the TIMER button is engaged with the TIMER indicator lit, the POWER and EJECT buttons have no effect and unloading of a cassette is not possible. If a cassette has not yet been inserted, simply insert a cassette; the power will be switched on to load the cassette properly and, after completion of automatic loading, the Timer Recording Standby mode will be engaged with power off.

Remote control unit

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit or dampen the terminals.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

CONTROLS, INDICATORS AND CONNECTORS

Front Panel

1 POWER button with LED indicator

Press to apply power to the recorder. The indicator will light. Loading a cassette also turns the power on.

2 Cassette loading slot

Insert a VHS or S-VHS cassette. The door will close and the indicator showing that a cassette is inside will appear on the FDP (fluorescent display).

3 Operation mode indicators

▶ Play mode	◂▶ Insert Edit mode
◀◀ Rewind mode	▶▶ Forward Search mode
▶▶ Fast Forward mode	◂◂ Reverse Search mode
▶|| Still or Slow mode	●▶|| Record Pause mode
●▶ Record mode	◂▶|| Audio Dub Pause mode
◂▶ Audio Dub mode	◂◂|| Insert Edit Pause mode

4 S-VHS mode indicator

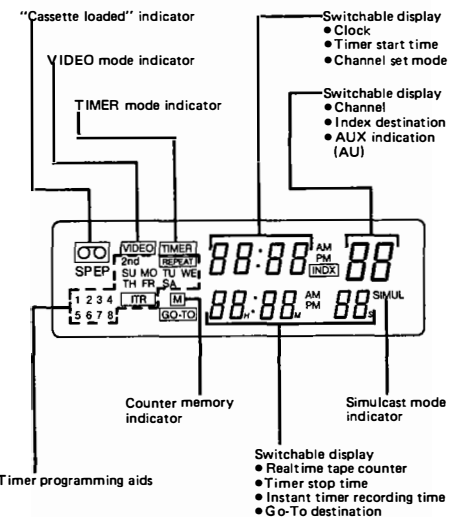
The "S-VHS" indicator illuminates when the S-VHS recording mode is selected with the S-VHS mode select button ④, or when S-VHS recordings are being played back. In playback, S-VHS recordings are automatically detected and played back in the S-VHS mode.

5 S-VHS CASSETTE indicator

This LED lights when a cassette marked S-VHS is inserted, with the cassette mark also appearing on the FDP. With a regular VHS cassette, only the cassette mark on the FDP lights.

6 Comprehensive fluorescent display panel (FDP)

Fully explained in relevant sections.



7 LED indicators

- STEREO** : Lights when a stereophonic TV program is being received.
- SAP** : Lights when a TV program accompanied by a second audio program is being received.
- INDEX MARK** : Blinks while an index code is being recorded.
- INDEX ERASE** : Blinks while an index code is being erased.
- SAP REC** : Lights when 2ND AUD on the Status Set menu is set for "YES".
- Hi-Fi** : Lights when Hi-Fi audio is selected with the AUDIO MONITOR button ⑩.
- NORMAL** : Lights when normal audio is selected. Both "Hi-Fi" and "NORMAL" indicators light when a mixture of the two is selected.

8 V. LOCK control

When operating in the Still mode, turn this control to eliminate vertical vibrations of the picture, if observed.

9 PICTURE SHARPNESS control

Use this control to make the picture sharper or softer. Effective only for playback pictures. (No effect when recording.)

10 Infrared beam receiving window

Direct the remote control towards this window.

11 TRACKING buttons

If noise bars are seen during playback, use these buttons to reduce them. The tracking is reset to normal when both buttons are pressed together, a cassette ejected, or the power turned off. These TRACKING buttons can also be used to adjust hi-fi tracking, referring to the hi-fi tracking meter. (See page 18.)

12 Audio level indicators/Hi-Fi tracking meter

See pages 17 and 18.

13 Hi-Fi REC LEVEL controls

See page 17.

14 LEVEL INDICATOR switch

Selects the function of the audio level indicators/Hi-Fi tracking meter. (See page 17.)

15 ALC (Automatic Level Control) switch

Set to ON to activate the automatic level control circuit for Hi-Fi audio. For manual control, set this switch to OFF and use the Hi-Fi REC LEVEL controls ⑬.

16 NOTCH FILTER

Normally set this switch to OFF. If dot noise is noticeable when watching television programs or during recording or playback in the S-VHS mode, set this switch to ON.

17 EDIT switch

Normally set to OFF. For making multi-generation dubs, set it to the ON position. (See page 34.)

18 AC ONLINE switch

OFF position : Power flows through the rear panel AC OUTLET ⑮ regardless of whether the recorder is on or off.

ON position : Power flows only when the recorder is on. When used in combination with the built-in timer, this enables timer-controlled power supply for the connected equipment.

19 MIC jack

Connect a microphone for audio dubbing.

20 PHONES jack

Connect a set of headphones for monitoring or private listening.

21 PHONES VOLUME control

Adjust the level of the audio output from the headphone jack.

22 TV/VIDEO button

Selects between TV and VIDEO modes.

TV mode (the VIDEO indicator on the FDP is off): for TV viewing and for watching a TV program while recording another.

VIDEO mode ("VIDEO" appears on the FDP): for recording a TV program while watching it and for playing back recorded tapes. When the power is switched on, the TV mode is engaged initially. To change the mode, press the TV/VIDEO button.

23 COUNTER MEMORY button

Press to engage the Counter Memory mode; M will appear on the FDP and the tape will automatically stop at the counter reading of "0H 00M 00s" when it is being fast-forwarded or rewound.

24 S-VHS mode select button

This button switches between the S-VHS and VHS recording modes. When the S-VHS mode is selected, the S-VHS indicator ④ lights. S-VHS recordings are possible only when S-VHS cassettes are used in the S-VHS recording mode.

25 AUDIO MONITOR button

Press to select the audio output. Each time the button is pressed, the soundtrack to be heard changes (Hi-Fi stereo, normal, or mixed playback) and is indicated by the Hi-Fi and NORMAL indicators ⑦.

26 SIMULCAST button

To record FM simulcast broadcasts, press this button (anytime, except in the AUX mode) to set to the SIMUL mode. "SIMUL" will light on the FDP. During recording, the video signal from the built-in tuner and the audio signal from the rear panel AUDIO IN connectors will be recorded.

27 MENU button

Press the MENU button to call up the on-screen menu for clock, status, channel presetting, and timer setting. (See pages 19 and 20.)

28 SET (-/+) buttons

Press the SET +/- buttons to adjust data indications or move the cursor in setting operations. (See pages 19 and 20.)

29 SELECT button

Press the SELECT button to proceed to the next step or to move the cursor in setting operations. (See pages 19 and 20.)

30 TIMER button

Press to engage the Timer Standby mode after you have preset the timer for untended recording.

31 REPEAT/ADD button

Press to enter the repeat command in timer programming or to store a channel during channel setting.

32 CHANNEL (V / ^) buttons

Press either button to select desired channel.

33 CANCEL/COUNTER RESET/SKIP button

Press this button at any time during timer programming to clear a program.

Press to reset the Realtime Counter display to "0H 00M 00s".

Press to skip non-broadcast or undesired channels during channel setting.

34 AUDIO DUBBING button

Press while in the Still mode, then press the PLAY/X2 button ③ to start audio dubbing. (See page 35.)

35 REC/ITR button

Press once for normal recording; again for instant timer recording; each successive press adds 30 minutes to the recording time to a maximum of four hours. (See page 26.)

36 INSERT button

Press for insert editing (See page 33.)

37 PLAY/X2 button

Press once to play back a tape; press again for double-speed playback. Also press this button to cancel the Pause/Still, Slow, or Search modes. (See page 24.)

38 REW and FF buttons

Press REW or FF while in the Stop mode to rewind or fast-forward the tape. To view a high-speed picture in the reverse or forward direction for program search, press the appropriate button while in the Play mode.

39 STOP button

Press this button to stop tape playback or recording.

40 PAUSE/STILL button

Press to temporarily stop the tape to avoid recording unwanted material or to view a still picture. The picture advances each time this button is pressed.

41 Cassette EJECT button

42 INDEX MARK button

Press during playback or recording to put an index code onto the tape. (See page 31.)

43 INDEX ERASE button

Press during playback to erase an index code. (See page 31.)

Remote Control Unit

The infrared remote control unit gives you full operational control from your viewing position. All control buttons, except those separately explained, have the same function as the corresponding buttons on the recorder. However, in the case of the REC button, to start recording, both the REC and PLAY/X2 buttons must be pressed simultaneously. The maximum operating distance is about 8 m (26 ft.).

TV OPERATION buttons (designated JVC TV models only.)

44 MONITOR TV/VIDEO button

Press to select the TV's operating mode: TV to view broadcast programs or tape programs via RF OUT connection and VIDEO to view programs via AV connection.

45 POWER button

Press to turn the TV power on or off.

46 VOLUME +/- buttons

Press either button to adjust the TV's sound volume.

47 CHANNEL +/- buttons

Press to select the desired channel on the TV receiver.

48 GO-TO button

Press once to engage the Realtime Go-To mode. (See page 29.) Press again to obtain a 5-second on-screen Realtime Counter reading in hours, minutes, and seconds.

49 INDEX button

Press to engage the Index Search mode. (See page 31.)

50 INTRO button

Press to engage the Intro Search mode. (See page 32.)

⑤ Numeric keys

Press to select a desired channel. Channel number will appear on the display and channel will change in 2 to 3 seconds. To change channels instantly, press the ENTER/ADD button immediately after pressing the numeric keys. These keys can also be used in conjunction with the Real-time Go-To and Index Search functions, and for menu selection in the On-Screen Menu mode.

⑥ ENTER/ADD button

The 5-second on-screen mode check display is obtained by pressing this button. It also functions as the ADD button in On-Screen Menu channel setting.

⑦ DISPLAY button

Press this button anytime to obtain a 5-second on-screen counter reading in hours, minutes, and seconds.

Or use to cancel the on-screen Program Set display instantly.

⑧ SP/EP select button

Press to SP position when you wish recordings to be made in the SP (Standard Play) mode. When you wish to record longer programs, or for prolonged and unattended recording of several broadcasts with a combined time of up to eight hours (with a T-160 cassette), press to EP (Extended Play) position.

⑨ VARIABLE SEARCH << / >> buttons

Use these buttons to control the search speed. Both slow-motion and fast-motion search are available. The slow-motion speed can be changed in 5 steps; 1/6, 1/12, 1/18, 1/24, and 1/30 of normal speed. For fast-motion search, available speeds are x1, x3, x5, x7, and x21 (EP mode) in both directions and x2 in the forward direction. Normal-speed reverse playback is also possible. No audio is available in the Variable Search mode. To cancel the Variable Search mode, press the PLAY/X2 button. (See page 24.)

⑩ REC button

Press together with the PLAY/X2 button to start normal recording.

⑪ SKIP SEARCH button

In the Play mode, press once to advance rapidly through the next 30 seconds of tape. This button may be pressed up to four times to zip through 2 minutes of tape. Press PLAY/X2 to cancel the Skip Search mode midway.

Rear Panel

① AC OUTLET

Connect the power cord of other audio or video equipment (such as an FM tuner) which requires less than 300 watts of power. The power flow through this outlet is controlled by the AC OUTLINE switch ②.

② REMOTE PAUSE terminal

When using a JVC video camera, connect the remote control cable of the camera adapter to this terminal to enable control of the tape with the camera's start/stop switch.

③ VIDEO OUT terminal

Connect to the VIDEO IN terminal of another video recorder for tape-to-tape transfer, or the VIDEO IN terminal of a video monitor for playback.

④ VIDEO IN terminal

Connect to the VIDEO OUT terminal of another video recorder for tape-to-tape transfer, or the VIDEO OUT terminal of the camera adapter for camera recording.

⑤ S-VIDEO OUT terminal

This is a special connector (4-pin) to deliver separated luminance and chrominance signals. For tape-to-tape transfer of S-VHS recordings, connect this terminal to the S-VIDEO IN terminal of a 2nd S-VHS video recorder using the provided video cable. Or connect to the same type of connector of a television or monitor equipped with an S-VIDEO input terminal. In these cases, use the AUDIO OUT terminals ⑥ for making audio connections.

⑥ S-VIDEO IN connector

This is a special connector (4-pin) to accept separated luminance and chrominance signals. To record this type of video signal, connect an appropriate source to this terminal using the provided video cable. Use the AUDIO IN terminals ⑦ for making audio connections.

⑦ ANT IN terminal

Connect the antenna cable or a Cable TV line. If necessary, use the matching transformer (provided).

⑧ RF output channel select switch

See "VIDEO CHANNEL SETTING" on page 10.

⑨ RF OUT terminal

Connect to the all-channel antenna connector (female F) of your TV receiver using the provided antenna cable.

⑩ AUDIO IN terminals

Connect to the AUDIO OUT terminals of another video recorder for tape-to-tape transfer, or the AUDIO OUT terminals of the camera adapter for camera recording.

⑪ AUDIO OUT terminals

Two pairs of AUDIO OUT terminals allow simultaneous connection to the AUDIO IN terminals of a video monitor and an audio amplifier for playback.

⑫ AC power cord

Connect to an AC 120 V, 60 Hz household outlet.

Remote Control Unit

A/B mode switching

A switch on the back of the remote control labelled A/B is accessible when the battery compartment cover is removed.

• This switch is preset to the "A" position. Do not touch it unless you use two JVC video decks side by side.

• When you place two JVC video decks near each other, use this remote control in the "B" mode to prevent both decks from responding simultaneously to this remote control's signals. For this purpose, carefully follow the instructions below:

(1) Unplug the power cord of the HR-S5000U from the AC outlet

(2) Set the remote control unit's A/B mode switch to "B".

(3) Plug the power cord of the HR-S5000U into the AC outlet.

(4) Turn on the power of the HR-S5000U using the remote control's POWER (VCR) button.

• The HR-S5000U "memorizes" this B code and then will respond only to the signals of this remote control unit. The other deck will respond only to its remote control.

Note:

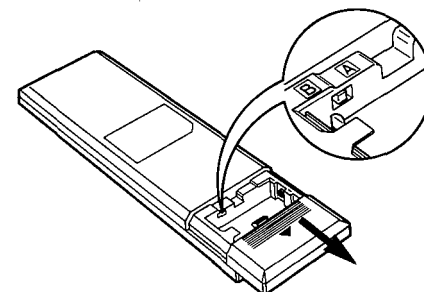
Do not operate other remote controls after you have plugged the HR-S5000U into the AC outlet and before you press the POWER (VCR) button of this remote control.

CAUTION:

Some televisions may malfunction in response to this remote control when used in the "B" mode. If this should happen, switch the mode back to "A".

Installing the batteries

- Slide the battery compartment cover on the rear of the unit in the direction of the arrow (▶).
- Insert 2 "AAA"-size batteries (provided) in the correct directions into the battery compartment.
- Replace the cover.

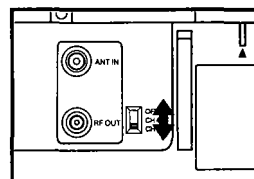


VIDEO CHANNEL SETTING

The built-in RF converter permits playback of video and audio recordings through a TV receiver.

The signals from the RF converter are viewed through a vacant channel not used for broadcasting in your viewing area.

(Rear)



The converter channel of all units is set to 3 prior to shipment from the plant. Reset the channel to 4 in areas where channel 3 is employed for broadcasting. For this purpose, slide the channel select switch on the rear of the unit to CH 4. This is YOUR video channel. To view video cassettes via RF OUT connection, always set the TV channel selector to either channel 3 or 4.

• If the recorder is connected to a television by connecting its VIDEO OUT (or S-VIDEO OUT) to the television's VIDEO IN (or S-VIDEO IN), set this switch to OFF. With this setup, the TV/VIDEO button has no effect on the output signal, and the recorder is always in the TV mode, regardless of whether the VIDEO indicator is on or off.

Connection	RF OUT channel select switch	Signal from RF OUT	TV/VIDEO button	TV's mode
RF + AV	OFF	Direct antenna signal always.	No effect.	TV or VIDEO
RF only	CH3 or CH4	Direct antenna signal in TV mode. RF channel 3 or 4 signal in VIDEO mode.	Switching is necessary depending on the intended operation.	TV

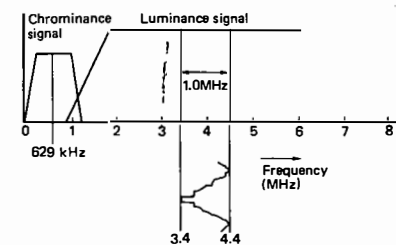
FOR A BETTER UNDERSTANDING OF S-VHS AND VHS

S-VHS vs. VHS

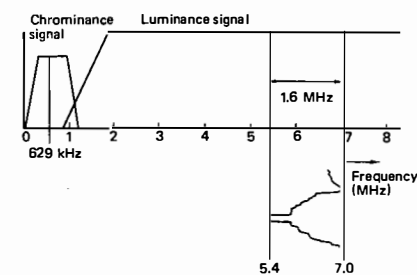
- VHS is the world's most popular video format. If you owned a VCR before the HR-S5000U, most likely it was a VHS machine.
- S-VHS is a new video sub-format based on VHS. It offers superior picture quality with a horizontal resolution of more than 400 lines by shifting the FM carrier frequency of the luminance signal from the conventional 3.4 – 4.4 MHz range to a higher one of 5.4 – 7.0 MHz.

Recording Signal Spectrum

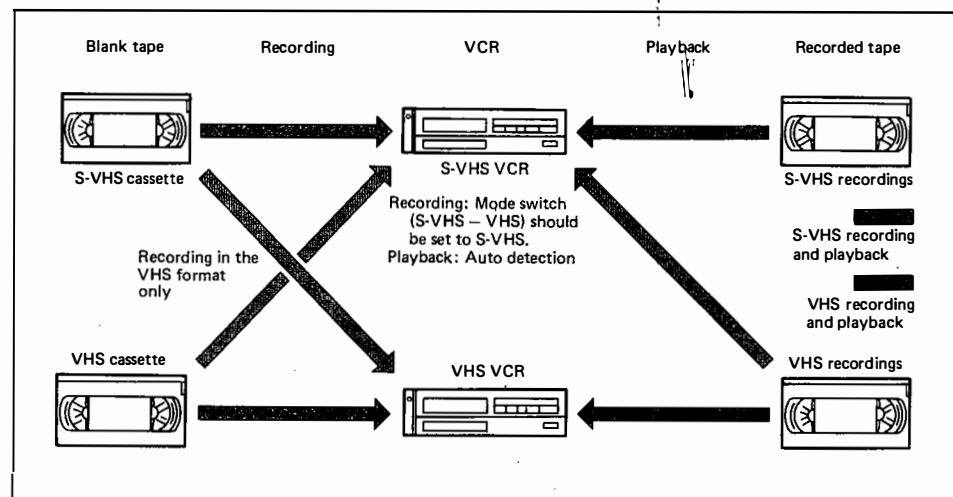
Video head output signal of VHS recording



Video head output signal of S-VHS recording

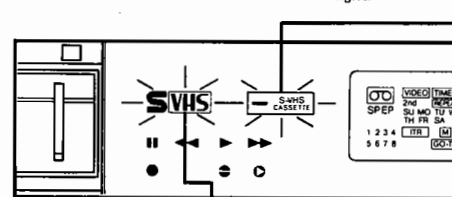


Compatibility between S-VHS and VHS

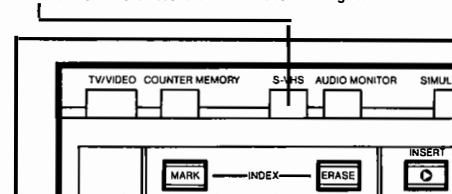


S-VHS Recording

Insert an S-VHS cassette: this indicator will light.

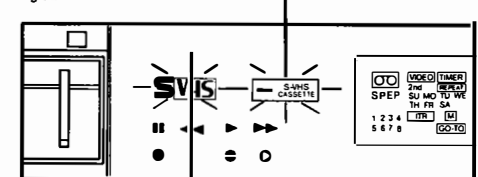


Press the S-VHS button: this indicator will light.



S-VHS Playback

Simply insert a recorded S-VHS cassette: this indicator will light.



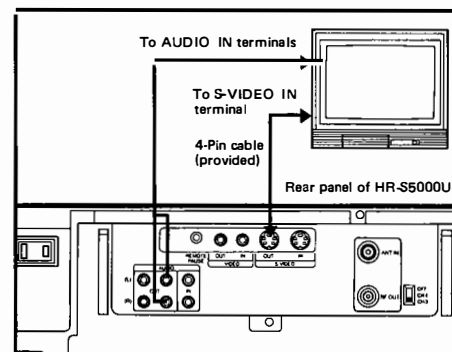
When playback starts, this indicator will light automatically.

How to take best advantage of S-VHS pictures

For flexibility, the HR-S5000U offers two sets of video input/output terminals: one for the regular composite video signal in which the luminance (Y) and chrominance (C) signals are remixed together, and the other for the separated Y/C signals. No special connections are necessary to record and play back broadcast programs. Simply follow the connecting instructions on page 11.

Using a television with S-VIDEO input

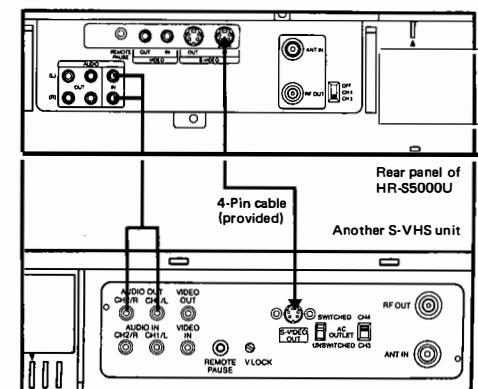
If your television is equipped with an S-VIDEO input (separated Y/C signals) terminal, this is an ideal way to enjoy the best possible S-VHS picture, because no interference occurs between the luminance and chrominance signals. Connect the S-VIDEO OUT terminal of the HR-S5000U to the S-VIDEO IN terminal of your television. To view video cassettes with this setup, set the TV to the VIDEO mode. With JVC's AV televisions, switching to the VIDEO mode can be performed on the HR-S5000U's remote control (MONITOR TV/VIDEO button).



Recording from other S-VHS equipment

For recording sources which deliver separated Y/C signals, use the S-VIDEO IN connector and proceed as follows:

- Insert an S-VHS cassette.
 - Switch to the S-VHS mode (by pressing the S-VHS button).
 - Select the AUX mode (by pressing the numeric key "0" on the remote control).
- If connections are made to both the VIDEO IN and S-VIDEO IN connectors, the input to the S-VIDEO IN connector has priority.



INFORMATION ON THE HR-S5000U'S AUDIO SYSTEM

Hi-Fi and normal audio

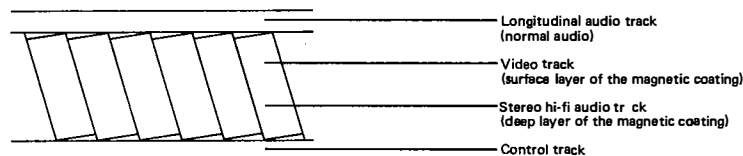
To provide true hi-fi audio accompaniment to video entertainment and, at the same time, compatibility with regular VHS tapes, the HR-S5000U employs a unique audio recording system. Hi-fi audio signals (2-channel) are recorded deep into the tape's magnetic coating, and the video signal is recorded on top of the audio signals in a shallower layer. At the same time, another audio head records normal audio signals (monaural) onto the usual longitudinal audio track. Since this longitudinal audio track is exactly the same as on monaural VHS tapes,

VHS tapes recorded on the HR-S5000U can be played back on other monaural VHS machines, and vice versa.

CAUTION:

- The hi-fi soundtrack recorded with the HR-S5000U cannot be reproduced with video equipment other than Hi-Fi VHS.
- Tapes recorded with a conventional stereo video recorder produce monaural sound when played back with the HR-S5000U.

Tape pattern recorded with the HR-S5000U



Hi-fi audio recording and reproduction are available only from the hi-fi audio track while the longitudinal audio track provides normal audio.

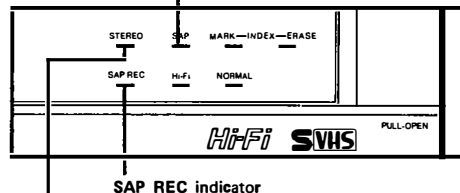
The hi-fi and normal soundtracks are recorded simultaneously, and audio dubbing is applicable only to the normal audio.

MTS (Multichannel Television Sound) compatibility

When stereo and SAP (Second Audio Program) programs are being received, the indicators light to inform you of the type of broadcast. Then you can select the desired soundtrack for recording with a single switch. The normal (longitudinal) audio track is monaural. Therefore, stereo programs are recorded in mono on the normal audio track. SAP programs can only be recorded on the normal audio track.

SAP indicator

Lights when an SAP program is being received. For recording the SAP soundtrack, see "2ND AUD Setting" on the right.



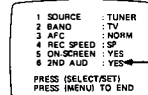
STEREO indicator

Lights when a stereo program is being received. Stereo programs are always recorded in stereo on the hi-fi audio track.

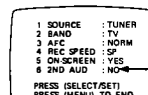
If the STEREO and SAP indicators light, it means that a stereo + SAP program is being received. If you want to record both soundtracks, set 2ND AUD to "YES" on the STATUS SET menu. (The SAP REC indicator will light). Then the stereo soundtrack will be recorded on the hi-fi audio track and the SAP soundtrack will be recorded on the normal audio track.

2ND AUD Setting

When an MTS broadcast is being received, it is necessary to make the appropriate SAP REC setting on the STATUS SET Menu according to which soundtrack you prefer to record on the normal audio track. (See page 20.)



To record the SAP soundtrack on the normal audio track, set 2ND AUD (second audio program) to "YES" (The main soundtrack, either mono or stereo, will be recorded on the hi-fi audio track.) The front panel SAP REC indicator will light.



To record the main soundtrack on the normal audio track, set 2ND AUD to "NO". Stereo programs will be recorded in mono (L + R mixed) on the normal audio track (and in stereo on the hi-fi audio track).

Note:

- Off-air MTS programs are received in accordance with the Broadcast Television Systems Committee (BTSC) standard. The method of transmission of stereo programs via cable varies from area to area and may not be compatible with the BTSC standard. Consult your local cable company for compatibility in your area.

Recording options according to the SOURCE Select setting.

Use this chart to determine the audio source and the VCR's On-Screen Menu "SOURCE" Select Setting for audio recording.

Track SOURCE Select setting	Video track	Normal audio track (mono)	Hi-fi audio track (2-channel)
1 SOURCE : TV 2 BAND : TV 3 AFC : NORM 4 REC SPEED : SP 5 ON-SCREEN : YES 6 2ND AUD : NO PRESS (SELECT/SET) PRESS (MENU) TO END	TV picture (from built-in tuner)		
1 SOURCE : TV 2 BAND : TV 3 AFC : NORM 4 REC SPEED : SP 5 ON-SCREEN : YES 6 2ND AUD : NO PRESS (SELECT/SET) PRESS (MENU) TO END	TV picture (from built-in tuner)		Audio signal from AUDIO IN
AUX 1 SOURCE : TV 2 BAND : TV 3 AFC : NORM 4 REC SPEED : SP 5 ON-SCREEN : YES 6 2ND AUD : NO PRESS (SELECT/SET) PRESS (MENU) TO END	Video signal from VIDEO IN or S-VIDEO IN		Audio signal from AUDIO IN

Note:

- You can record audio only (without recording any video signal) on the normal and hi-fi audio tracks. This means you can record a continuous 8-hour FM program onto a single cassette (T-160). For this purpose, make a SOURCE setting for AUX and connect an audio source, such as an FM tuner, to the AUDIO IN connectors. Nothing should be connected to the VIDEO IN or S-VIDEO IN connector.

Recording options according to the type of broadcasts and the 2ND AUD setting (indicated by the SAP REC indicator)

Use the chart below to determine the effect the On-Screen Menu "2ND AUD" setting will have on an incoming TV signal.

Audio track 2ND AUD setting and SAP REC indicator		Normal audio track (mono)		Hi-fi audio track (2-channel)	
Type of broadcast	Either NO or YES setting			L	R
Regular broadcast (monaural audio)		Mono		Mono	Mono
Regular + SAP (Second audio program)	SAP REC	Main audio		Main audio (mono)	Main audio (mono)
	SAP REC	Second audio		Main audio (mono)	Main audio (mono)
Stereo + SAP (Second audio program)	NO setting	L + R mixed		Stereo	
	YES setting	Second audio		Stereo	
Stereo broadcast	Either NO or YES setting	L + R mixed		Stereo	

Note:

- Second audio programs cannot be recorded on the hi-fi audio track.

Hi-Fi audio recording level adjustment

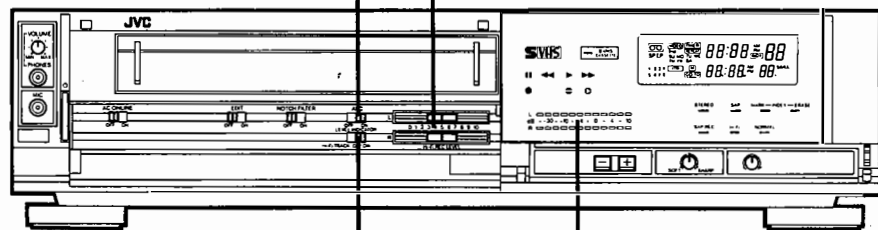
While recording onto the normal audio track is controlled by the built-in Automatic Level Control (ALC) circuit, hi-fi audio recording has two control options: manual and automatic.

ALC switch

Setting this switch to ON activates the built-in audio limiter circuit for both channels so that the recording level is automatically controlled. For manual adjustment, set this switch to OFF. (The recording level for normal audio is always controlled automatically regardless of the setting of the switch.)

Hi-Fi REC LEVEL controls

Slide these controls, the upper for left channel and the lower for right channel, for manual adjustment of the hi-fi audio recording level.



LEVEL INDICATOR switch

For manual control of the recording level, set this switch to ON so that the audio level indicators on the FDP will light.

Audio level indicators

For manual control of the recording level, first set the relevant switches as follows:

ALC → OFF
LEVEL INDICATOR → ON
AUDIO MONITOR → Hi-Fi

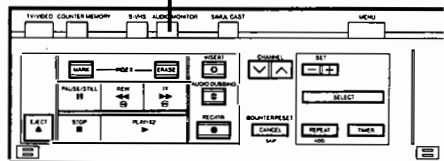
Then slide the Hi-Fi REC LEVEL controls referring to these indicators. When indicators up to or near 0 dB light for the loudest signal being received, the recording level is optimum. (The level at which only one red indicator lights from time to time may be most appropriate.) During playback, these indicators show the level of audio signals recorded on the tape and selected with the AUDIO MONITOR button.

If no signal is recorded on the hi-fi audio track, the level of normal audio is automatically indicated.

These indicators do not light when the LEVEL INDICATOR switch is in the OFF position.

Notes:

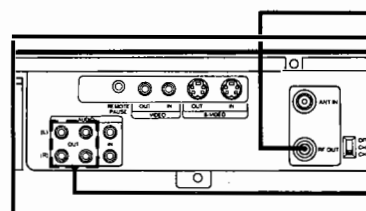
- With "NORMAL" selected with the AUDIO MONITOR button, the recording level of hi-fi audio signals cannot be correctly indicated. Select "Hi-Fi" when adjusting the recording level.
- The normal audio signal level is also displayed by these indicators, but cannot be adjusted.



AUDIO MONITOR button

Dual-audio playback flexibility

Two different types of audio tracks (hi-fi and normal) allow a variety of playback options depending on the connection and the settings of relevant controls and switches.



RF OUT connector

Delivers audio and video signals to a TV receiver. When the recorder is not used, the antenna signal is supplied from this connector to the TV receiver to allow regular TV viewing. When a video tape is played back through the RF OUT connector, the audio is reproduced always as monaural; with hi-fi stereo tapes, both channels are mixed. Therefore, for stereo playback, connect a stereo system to the AUDIO OUT connectors. Refer to page 12.

AUDIO OUT connectors

Deliver the audio signals from both hi-fi and normal audio tracks.

LEVEL INDICATOR switch and TRACKING control buttons

The audio level indicators on the FDP show the audio signal level during recording and playback when the LEVEL INDICATOR switch is set to ON.

The right-channel audio level indicator also functions as a tracking meter during playback. If noise or breaks are sensed in the reproduced sound from the hi-fi audio track, attempt correction by using the TRACKING controls while referring to the meter. For this purpose, set the LEVEL INDICATOR switch to Hi-Fi TRACK and press either TRACKING control button so that the greatest number of elements of the right-channel indicator light.

When this switch is set to OFF, the indicators do not light, regardless of whether during recording or playback.

Note:

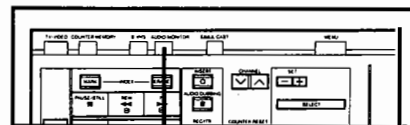
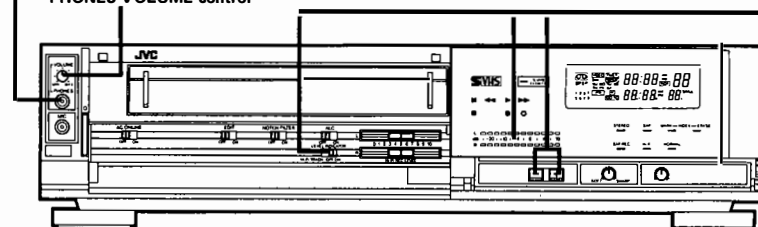
- When playing back a tape with no recording on the hi-fi audio track, the level indicator does not light when the LEVEL INDICATOR switch is set to Hi-Fi TRACK.

PHONES jack

Delivers the audio signals from both hi-fi and normal audio tracks.

The headphone output level is adjustable with the PHONES VOLUME control.

PHONES VOLUME control

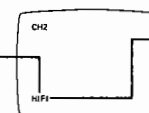


AUDIO MONITOR button

Selects the hi-fi stereo soundtrack, the normal soundtrack, or a mixture of the two for listening. Each time the button is pressed, the selected soundtrack changes in the order of hi-fi stereo, normal, mixed, and then back to hi-fi stereo and the corresponding audio output indicator will appear on the screen. For mixed playback, both the HIFI and NORM indicators will appear on the screen and their LED's will light on the front panel.

- Set to HIFI to listen to a stereo soundtrack.
- Set to NORM to listen to the normal sound.
- Set to NORM/HIFI to listen to both.

NORM
NORM
HIFI



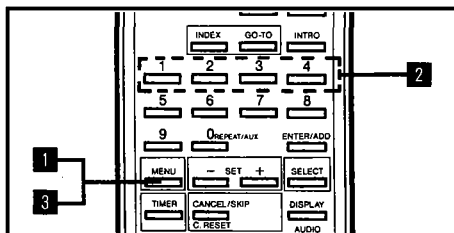
On-screen Hi-Fi Stereo,
Normal and
Mixed indications.

Notes:

- This button functions during recording as well, although it has no effect on the recorded signal.
- When a tape with normal audio only is played back, the NORM mode is automatically selected.

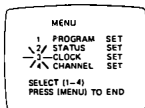
ON-SCREEN MENU SYSTEM

With this recorder, clock setting, channel presetting, status selection and timer programming are all done with the on-screen menu system. Before you operate the recorder, use the Menu function to set the clock and status, and, if necessary, change the built-in tuner's channel allocation.



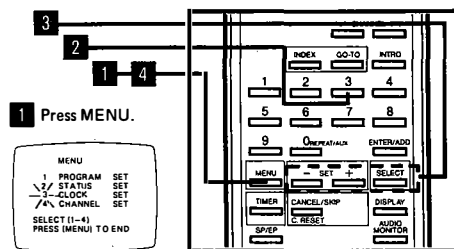
Plug the recorder into an AC outlet (AC 120 V). Turn on the recorder and connected TV. Set the TV as required: to the AV (VIDEO) mode or your video channel (3 or 4) depending on the connection and the setting of the RF OUT channel select switch. (See page 10.)

- 1 Press the MENU button (on the recorder or remote control).
 - The menu screen will be obtained.
 - In the initial status, the cursor is on "3" (CLOCK SET), otherwise it will be positioned on the last-engaged item.

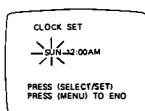


- 2 Press the numeric key ("1", "2", "3" or "4") corresponding to the setting mode you want to enter.
 - The menu screen will change to the relevant setting mode.
 - You can also call up the relevant setting mode by moving the cursor with the SET (- or +) button and then pressing the SELECT button.
 - For clock setting, proceed to the next section.
 - For status setting, proceed to page 20.
 - For channel presetting, proceed to page 20.
 - For timer programming, proceed to page 27.
- 3 To go back to the TV picture from the menu screen, press the MENU button.
 - If the menu screen is left unchanged for longer than 60 seconds, it will automatically be cancelled and the TV picture will appear.

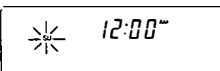
ON-SCREEN MENU CLOCK SETTING



- 1 Press MENU.
 - If "SET" in "3. CLOCK SET" is not displayed, clock setting is not possible (during timer recording or instant timer recording). If the CLOCK SET menu is called up in this case, no cursor will appear on the CLOCK SET menu.
- 2 Press numeric key "3" on the remote control (or press SELECT on the recorder's control panel).
 - The following CLOCK SET menu will appear on the screen (and the corresponding clock setting mode on the recorder's FDP).



FDP



- 3 If left for longer than 10 seconds, this menu is cancelled.
 - Timekeeping continues in this state.
- 4 Press SELECT to move the cursor and press SET (-/+) to set the data.
 - Once the Clock Setting mode is engaged, timekeeping stops.
- 5 Press MENU at the exact instant of the time signal and the clock will be set accurately to the second.
 - The screen will return to the TV picture and the clock time will be superimposed on the TV picture for 5 seconds.

Note:

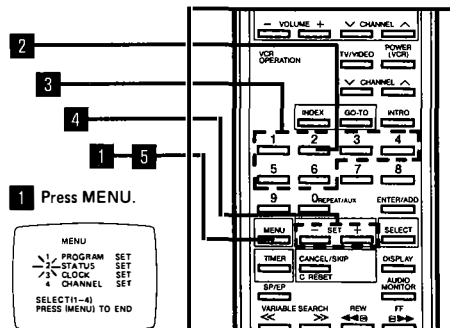
- Pressing the SET - or + button continuously advances the corresponding indication automatically. Pressing either one of them once advances the indication in single increments.

Power failure indicator

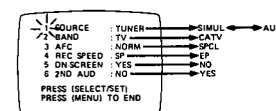
The clock display on the FDP may reset to SU 12:00 AM and start to flicker rapidly. This is not a clock malfunction, but indicates that there has been a power failure. Readjusting the time restores the normal condition of the clock display.

- If the period of power outage is less than 10 minutes, correct timekeeping continues when power is reapplied.
- During this 10-minute period, the built-in memory back-up capacitor maintains timekeeping and preset timer memory though the display blacks out.

ON-SCREEN MENU STATUS SETTING



- 1 Press MENU.
 - If "SET" in "2. STATUS SET" is not displayed, status setting is not possible (during timer recording). If the STATUS SET menu is called up in this case, no cursor will appear on the STATUS SET menu.
- 2 Press numeric key "2".
 - The following STATUS SET menu will appear on the screen.
 - Pressing the MENU button at this stage will restore the menu screen.



- In the initial status, the cursor is on "1" (SOURCE), otherwise it will be positioned on the last-set item.
 - If left for longer than 60 seconds, this menu is cancelled.
- 3 Select the item to be set by pressing the corresponding numeric key ("1" to "6").
 - The cursor will move to the data column of the corresponding item.
 - You can also select the item to be set by moving the cursor with SET (for numbers) and SELECT (between the number and data column.)
 - 4 Change the status with SET (-/+).
 - When the ON-SCREEN status is set to "YES", comprehensive on-screen indications are available for mode check. See page 22.
 - 5 To go back to the TV picture, press MENU.

Note:

Changing "TUNER" to "SIMUL" or "AUX", and switching between SP and EP can be done without calling up the menu screen (except during recording) by pressing the SIMUL button (on the recorder), numeric key "0" (AUX) and the SP/EP button, respectively.

ON-SCREEN MENU CHANNEL SETTING

The HR-S5000U incorporates an advanced frequency synthesized tuner which is pretuned to VHF channels 2 through 13, UHF channels 14 through 69, and 87* cable TV channels (excluding 12 VHF broadcasts). There is no need to pretune the tuner; simply store the pretuned channels.

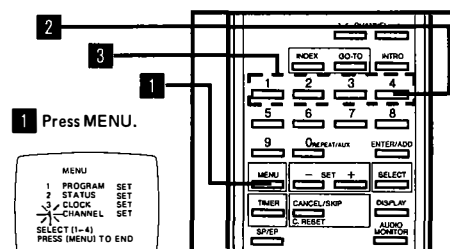
Note:

If the picture is not clear, perform fine tuning on your television.

* In Canada, 84 cable TV channels

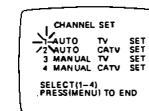
Storing and skipping channels

A total of 155 channels are receivable. However, to prevent the tuner from scanning all the frequencies to reach your desired station, you can store some channels and skip others. It is possible to restore the skipped channels whenever necessary. To do this, use the On-Screen Menu function.



- 1 Press MENU.
 - If "4. CHANNEL SET" does not appear on the menu, channel setting is not possible (during recording or playback). In this case, the CHANNEL SET menu cannot be called up.
- 2 Press numeric key "4".
 - The following CHANNEL SET menu will appear on the screen.

- Pressing the MENU button at this stage will restore the menu screen.



- In the initial status, the cursor is on "1" (AUTO TV SET), otherwise it will be positioned on the last-engaged mode.
 - If left for longer than 60 seconds, this menu will be cancelled.
- 3 Select the mode by pressing the corresponding numeric key ("1" to "4").
 - The display for the selected mode will be obtained, and the corresponding indication will appear on the FDP.
 - You can also call up the required display by moving the cursor with SET (for numbers) and then pressing SELECT.

Available channel set modes

AUTO TV SET: For automatic tuning and storing of all available UHF/VHF TV channels.

AUTO CATV SET: For automatic tuning and storing of all available cable channels.

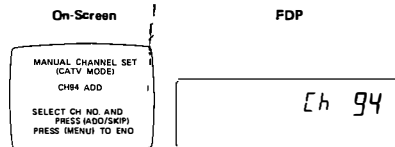
MANU TV SET: For manual tuning and skipping/storing of UHF/VHF TV channels.

MANUAL CATV SET: For manual tuning and skipping/storing of cable channels.

AUTO TV SET/AUTO CATV SET



MANUAL TV SET/MANUAL CATV SET



1 AFC will be turned on automatically and scanning will start from the lowest channel in the corresponding band (TV or CATV).

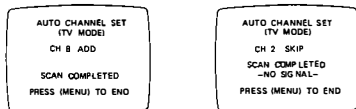
• During scanning, the message "SCANNING..." will be displayed on the screen.

2 Each time a broadcast is detected, scanning stops and either "SKIP" ("PO" on the FDP) or "ADD" (no indication on the FDP) is displayed.

• When there is no broadcast on that channel, "SKIP" is displayed for about 1 second on the blue background.

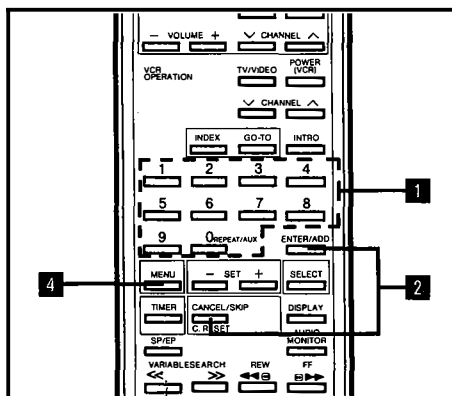
• When there is a broadcast, the on-screen display is superimposed on the TV picture and "ADD" is displayed for about one second.

3 After completion of scanning, the number of the lowest stored channel is indicated superimposed on the TV picture. If all channels are skipped, the lowest channel is indicated on the blue background.



4 To go back to the menu screen, press MENU.

• If you do not need the menu screen, simply engage the desired operation mode (Play, Record, etc.)



For favorite channel programming, use these modes.

4 Select the channel to be stored or skipped with 10-key input or up/down scanning.

• Only stored channels can be called up by up/down scanning. Therefore, to re-store skipped channels, use 10-key input.

3 To store, press REPEAT/ADD (on the recorder) or ENTER/ADD (on the remote control).

To skip, press COUNTER RESET/CANCEL/SKIP (on the recorder) or CANCEL/SKIP/C.RESET (on the remote control).

• "ADD" or "SKIP" will be displayed. (On the FDP, when a channel is skipped, "PO" will be displayed for about 1 second in place of the channel number and then the channel number will start blinking.)

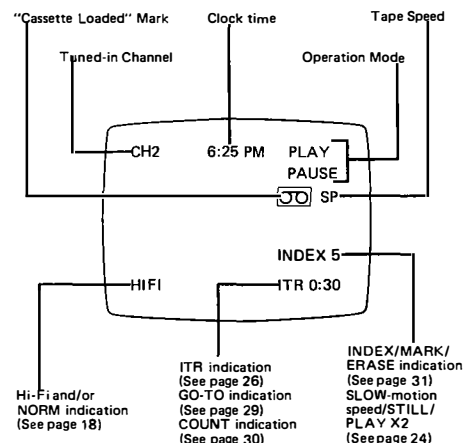
2 Repeat steps 1 and 2 for other channels.

4 To go back to the menu screen, press MENU.

• If you do not need the menu screen, simply engage the desired operation mode (Play, Record, etc.)

ON-SCREEN DISPLAY

ON-SCREEN MODE CHECK DISPLAY



Automatic indication

• Channel display

Each time a different channel is selected, the tuned-in channel will be displayed on the screen for 5 seconds. (No channel display is available during tape playback.)

• Operation mode

Each time the operation mode is changed, the engaged mode is displayed.

RECORD (5 sec, together with channel, cassette mark and tape speed), PLAY (5 sec, only when engaged from Stop mode), FF/REW (5 sec, only when engaged from Stop mode), INSERT and A.DUB (5 sec), A.DUB PAUSE (5 sec), RECORD PAUSE, and INSERT PAUSE (as long as the Pause mode is engaged).

• "Cassette Loaded" mark

The mark is displayed for 5 seconds when a cassette is inserted, and blinks until the cassette is ejected when the EJECT button is pressed.

Manual recall/cancel

• For anytime checking of the mode, press the ENTER button on the remote control. The corresponding indications above will be available on the screen together with the clock time for 5 seconds.

LOADING AND UNLOADING A CASSETTE

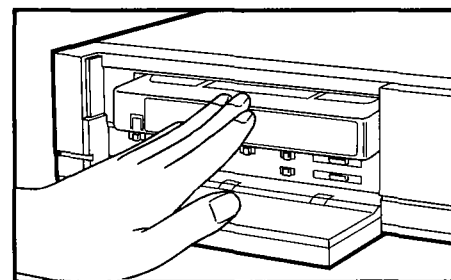
Loading

Insert a cassette as illustrated with its labelled side facing you.

• With a cassette inserted, the mark to indicate "cassette inserted" appears on the display panel and TV screen.

Unloading

Press the EJECT button. The cassette will be ejected.



Motorized loading system

• The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.

- The cassette can be unloaded even when the power has been turned off. If a cassette is inside, pressing the EJECT button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

Notes:

- Be sure to insert the cassette firmly into the slot; otherwise, it will be automatically rejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.

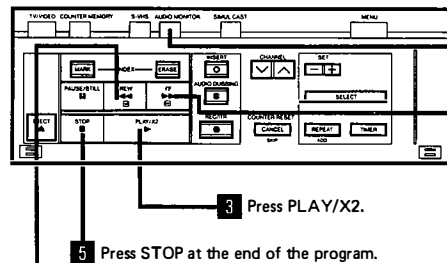
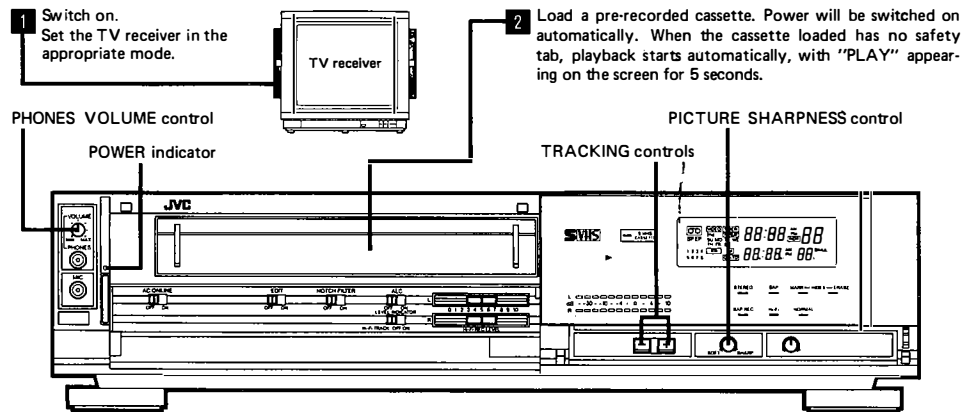
Caution

- If unloading of a cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the TIMER button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.

WARNING

- Do not insert fingers or any foreign object beyond the door flap of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

PLAYING BACK A VIDEO CASSETTE



High-speed reverse search REW/SHUTTLE SEARCH button

- To rewind the tape, press this button in the Stop mode.
- To shuttle search the tape in the reverse direction, press this button in the Play mode.
- The shuttling speed is about 7 times normal in the SP mode and 21 times normal in the EP mode.
- Press the PLAY/X2 button to return to normal playback.

Notes:

- The SP/EP button may be in either position.
- The SP, LP or EP mode recording is automatically detected and played back at the correct speed.
- Irrespective of the S-VHS mode button setting, the S-VHS or VHS recording mode is automatically detected and played back in the correct mode. The S-VHS mode indicator lights for playback of S-VHS recordings.
- When the PLAY/X2 button is pressed to start playback, the VIDEO mode is automatically entered, the VIDEO indicator on the FDP lights and "PLAY" appears on the screen for 5 seconds.
- The tape-end auto rewind mechanism functions in both the Play and Fast Forward modes.
- For briefer scanning, keep the SHUTTLE SEARCH button pressed for more than 2 seconds; when you release the

Skip Search function

During playback, press the remote control's SKIP SEARCH button from 1 to 4 times to zip through 30-sec. to 2-min. sections of tape. Press the PLAY/X2 button to cancel the Skip Search mode.

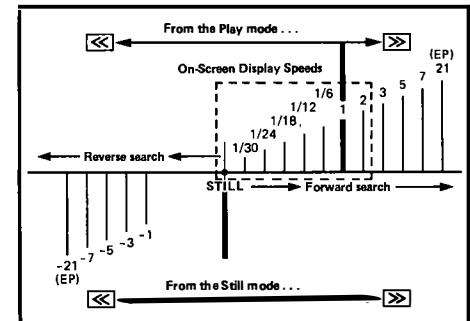
- button, the Search mode will be cancelled. In this case, the shuttling speed in the EP mode is about 7 times normal.
- Noise bars may appear on the screen if you play back a tape which was recorded using another recorder. In such cases, adjust the TRACKING controls. Press one of the buttons until a satisfactory picture is obtained. After playback, tracking may be reset manually by pressing both buttons simultaneously. It is reset automatically when the tape is ejected or the power turned off.
- When listening through headphones, if the volume is too low or too high, adjust the PHONES VOLUME control for comfortable listening.
- Images on the screen can be adjusted to a preferred softer or sharper definition by turning the PICTURE SHARPNESS control.

SPECIAL-EFFECTS PLAYBACK

VARIABLE SEARCH buttons on the remote control

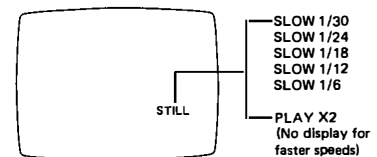
Variable speed search is possible in either forward or reverse direction from either the Still or Play mode.

- To search in the forward direction:
 - Press the >>> button in the Play mode to start fast-motion searching from 2 times normal speed. To increase speed (to 3, 5, 7, 21 times normal), press >>> repeatedly.
 - Press the >>> button in the Still mode to start slow-motion searching from 1/30 normal speed. To increase speed (to 1/24, 1/18, 1/12, 1/6, normal, X2, X3, X5, X7, X21), press >>> repeatedly. To decrease speed, press <<< repeatedly. (Pressing the <<< button in the Play mode, starts slow-motion searching at 1/6 normal speed.)
- To search in the reverse direction:
 - Press the <<< button in the Still mode to start searching in the reverse direction at the same speed as normal speed playback. To increase speed (to -3, -5, -7, -21 times normal), press <<< repeatedly. To decrease speed, press >>> repeatedly.
 - To return to the normal Play mode, press the PLAY/X2 button.



- Selected slow-motion and X2 speeds can be displayed on the screen anytime by pressing the ENTER button.

ON-SCREEN DISPLAY



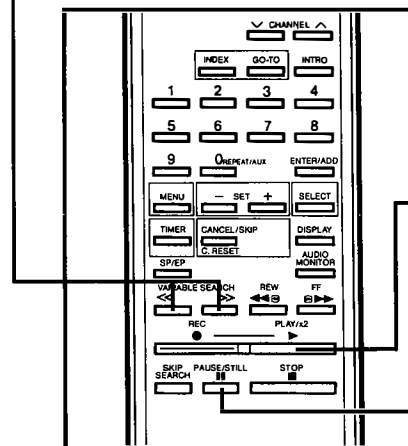
Double-speed playback PLAY/X2 button

- Press while in the Play mode; double-speed playback will be engaged.
- To resume normal playback, press the same button again.

Still playback

PAUSE/STILL button

- Press while in the Play mode; the tape will stop and a still picture will be obtained.
- To advance the still picture, press again.
- To return to the normal Play mode, press the PLAY/X2 button.

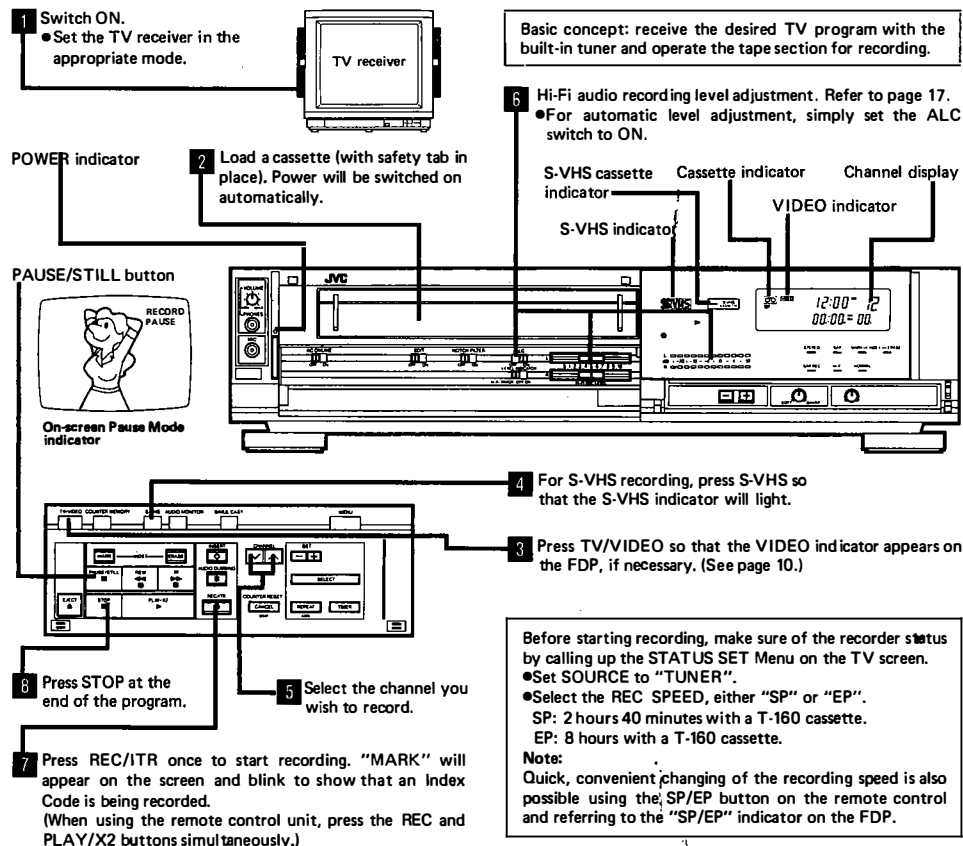


Notes:

- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some video cassettes, the TV picture may distort during slow-motion playback. This is not due to any defect of the unit.
- If noise bars are visible, use TRACKING controls as described on the previous page.
- With some televisions, the still picture may be unstable. If vertical vibration of the picture is observed, attempt to correct it by turning the V-LOCK control.

- No audio is available during any Special-effects playback mode.
- Special-effects playback is not possible in the LP mode. When the Special-effects mode is engaged during playback of LP recorded tapes, the picture disappears from the screen. If you happen to engage one of the Special-effects modes while playing an LP tape, simply press the PLAY/X2 button to restore the picture.

BASIC OPERATION FOR RECORDING TV PROGRAMS



Notes:

- If the REC/ITR button is pressed more than once, the Instant Timer Recording mode will be entered (see page 26). To return to ordinary recording, repeatedly press the REC/ITR button until the ITR indicator in the FDP is extinguished.
- If there is part of the program you don't want to record, press the PAUSE/STILL button. To release the Pause mode, press the PLAY/X2 button.
- When the Pause mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- If the REC/ITR button cannot be engaged, check to see if the cassette safety tab has been removed. (See page 6.)
- When recording is restarted from the Pause mode, assemble recording is performed so that the playback picture will not distort at the edit point.
- When the end of the tape is reached during recording, the tape is automatically rewound to the beginning and stops.
- The built-in tuner's automatic channel lock mechanism prevents the selected channel from being altered during

recording. Therefore, if you wish to change the channel during recording, first engage the Pause mode and then select a different channel.

RECORDING ONE PROGRAM WHILE WATCHING ANOTHER

A program not being viewed can be recorded while you enjoy viewing another program. This permits the recorded program to be played back later at your convenience.

The key points to be remembered are:

- Select the channel you wish to record with the recorder's channel selector.
- Select the channel you wish to view with the TV receiver's channel selector.
- With RF-only connection, the TV/VIDEO button should be in the TV mode (VIDEO indicator off). If the indicator is lit, press the TV/VIDEO button to turn it off. (See page 10.)

INSTANT TIMER RECORDING

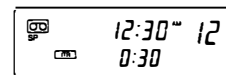
- Start recording as described on the previous page.

After you start recording, the recorder can be set to stop automatically after a certain period of time. Use this facility for starting a recording before you go to bed or leave home.

- Press REC/ITR while recording (or twice if in the Stop mode).
●The following indication will appear on the display, to show that the recorder is recording in the Instant Timer Recording mode and power will switch off after 30 minutes.

ON-SCREEN DISPLAY

FDP



- Each time the REC/ITR button is pressed, recording time increases by 30 minutes to a maximum of 4 hours. If the REC/ITR button is pressed again, the Normal Recording mode will be entered.
●For a more precise time setting, use the SELECT and SET buttons to set to the exact time required (possible up to 8 hours and 59 minutes).
1. After "0:30" has appeared, press SELECT.
2. Press SET + or - to specify the hour digit, then press SELECT.
3. Press SET + or - to specify the minute digits, then press SELECT so that the digits stop blinking.

Notes:

- Time setting in the Instant Timer Recording mode is possible up to a maximum of 8 hours 59 minutes if the SELECT and SET +/- buttons are used.
- While recording is in progress, the displayed time counts down; when 0:00 is reached, the Record mode is released after 10 seconds and the power is switched off.
- If you want to stop recording after having started recording in the Instant Timer Recording mode, press the STOP button.
- If instant timer recording is engaged while the unit is in the Pause mode, the timer will count down normally, but recording will not begin until the PLAY/X2 button is pressed.
- When the Instant Timer Record-Pause mode continues longer than about 5 minutes, the mode is released and power is switched off.
- If you want to check the elapsed time (Realtime Counter reading) while performing instant timer recording, press the DISPLAY button on the remote control to obtain the desired indication (the ITR indication disappears). After about 5 seconds, the indicator will return to the ITR mode and the remaining time indication will reappear automatically.

OTHER RECORDING POSSIBILITIES

Recording Stereo TV Programs

When stereo TV programs are broadcast, the HR-S5000U is capable of automatically receiving them in stereo. When a stereo program is being received, the STEREO indicator lights and recording is made in stereo on the hi-fi audio track and in monaural on the normal audio track. To listen to the stereo soundtrack during recording, press the AUDIO MONITOR select button so that the HIFI indicator lights on the screen.

Recording SAP (Second Audio Program) TV Programs

When an SAP TV program is being received, the SAP indicator lights. To record such a program, pay attention to two additional controls and the basic operation described on the previous page.

- Set 2ND AUD in the STATUS SET menu to YES to record the second audio program. To record the main audio program only, set 2ND AUD to NO. (See page 20.)
- Press the AUDIO MONITOR select button so that the NORM indicator appears on the screen to listen to the SAP soundtrack being recorded.

Note:

- SAP programs can be recorded only on the normal audio track. It is not possible to record any SAP program on the hi-fi audio track, regardless of any setting.

Recording FM Simulcast TV Programs

FM simulcast TV programs can be recorded using an FM stereo tuner. Connect necessary components. (Connect the FM tuner to the AUDIO IN connectors.) Select the TV channel broadcasting the simulcast program with the recorder's channel select buttons and tune the FM stereo tuner to the station broadcasting the soundtrack for this TV program.

The only difference from the basic recording procedure (described on page 25) is the additional SOURCE setting described on page 20.

- Set SOURCE to SIMUL by pressing the SIMULCAST button ("SIMUL" will appear on the FDP). With this setting, the audio signals from the built-in tuner will be recorded on the normal audio track and the audio signal from the FM stereo tuner will be recorded on the hi-fi audio track.

Notes:

- After finishing recording, be sure to set SOURCE back to TUNER by simply pressing the SIMULCAST button.
- While recording simulcast programs, the hi-fi sound might be distorted momentarily at switching points between different programs (at the insertion of commercials, for example). This is not due to any defect of the unit.
- Using the "simulcast" recording function, you can record independent audio and video programs. While recording a TV program, record any audio source independently, by connecting an audio component to the AUDIO IN connectors.

Using the HR-S5000U as an Audio Deck

Audio-only recording

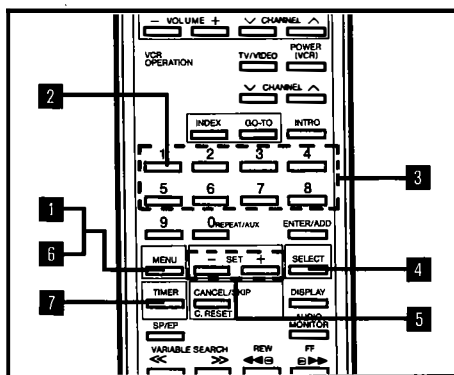
You can record audio only (without recording any video signal) on the normal and hi-fi audio tracks. This means you can record a continuous 8-hour FM program onto a single cassette (T-160).

- Connect an audio source (such as an FM tuner) to the AUDIO IN connectors.
- DO NOT connect any equipment to the VIDEO IN connector.
- Set SOURCE to AUX by pressing numeric key "0".

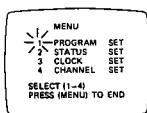
AUTOMATIC TIMER RECORDING



First of all, load a cassette (with safety tab in place); power will be switched on automatically.



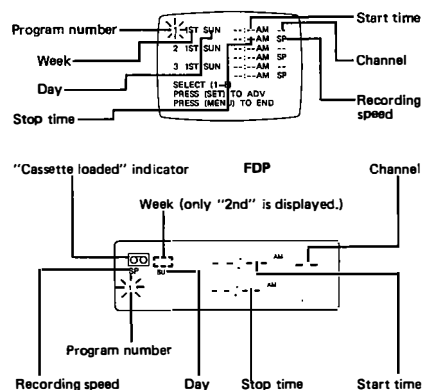
1 Press MENU.



• If "SET" in "1. PROGRAM SET" is not displayed, program setting is not possible (during timer recording, instant timer recording, or when the clock has not been set).

2 Press numeric key "1".

• The following PROGRAM CHECK menu will appear on the screen (and the program appearing at the top of the screen will also be shown on the recorder's FDP).



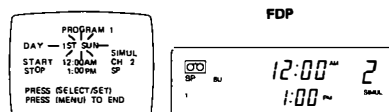
The built-in 14-day/8-event programmable timer permits recording of preset channels on preset days at preset times for preset lengths while you are away.

- Pressing the MENU button at this stage will restore the menu screen.
- In the initial status, the cursor is on "1" (Program 1). Otherwise the cursor will be positioned on the last-set program number. The last-set program will always be displayed at the top of the screen.
- If left for more than 60 seconds, this menu will be cancelled.

2 Select the program to be set by pressing the corresponding numeric key ("1" to "8").

- Although only three programs at a time are displayed on the screen in the Program Check mode, you can call up any program whether it is displayed or not.

- The corresponding PROGRAM SET menu will appear, with the cursor on "DAY".



- You can also select the program to be set by pressing SET - or + to move the cursor to the desired program, then pressing SELECT to call up the PROGRAM SET menu.

4 Select the item to be set (DAY, START, CH, STOP, SP/EP) by pressing the SELECT button.

- As the SELECT button is pressed, the cursor moves in sequence from DAY to SP/EP and then returns to DAY.

2 Set the desired data by pressing the SET - or + button.

- Channel setting is also possible with 10-key input.
- Pressing the SET + or - button for more than 1 second continuously advances the indication automatically. Pressing the buttons once advances the indication in single increments only.

- The STOP time can be set within 24 hours of the START time.

- To record an FM simulcast, press the SIMULCAST button (●) on the recorder at any time while programming. "SIMUL" will appear on the screen in the mode column above channel number, and "SIMUL" will appear on the FDP.

- To record an external source, press the numeric key "0" while the cursor is at the channel position. "AUX" will appear in the channel display section on the screen and "AU" on the FDP.

6 When all data has been set, press MENU.

- The PROGRAM CHECK menu will be called up and the program you have just set will appear at the top of the screen.

- In the PROGRAM CHECK menu, simulcast recordings are indicated by an asterisk (*) appearing between the start time and channel indicator.

2 Press TIMER.

- The TIMER indicator and the numbers of the preset programs will light on the FDP. (For error indications, see next page.)

- To cancel the PROGRAM CHECK menu without entering the Timer Standby mode, press the DISPLAY button.

IMPORTANT INFORMATION ON TIMER RECORDING

Variety of day setting possibilities

No.	Setting	Indication	FDP	ON-SCREEN
1	One day of the 1st week	Day (+REPEAT)		3 1ST MON --- AM -- --- AM SP
2	One day of the 2nd week	2nd + Day (+ REPEAT)		3 2ND MON --- AM -- --- AM SP
3	Daily serial recording from Sunday through Saturday week after week	All days + REPEAT		3 SUN-SAT --- AM -- REPEAT --- AM SP
4	Daily serial recording from Monday through Saturday week after week	MON through SAT + REPEAT		3 MON-SAT --- AM -- REPEAT --- AM SP
5	Daily serial recording from Monday through Friday week after week	MON through FRI + REPEAT		3 MON-FRI --- AM -- REPEAT --- AM SP

- As the SET + button is pressed, the indication progresses in sequence from No. 1 to No. 5 of the above settings and then returns to No. 1.

- REPEAT indication for No. 1 and No. 2 is available by pressing the REPEAT button at any time in the setting procedure.

Note:

- The 1st week or 2nd week do not refer to weeks on the calendar; the 1st week refers to the seven-day period from the present day and the 2nd week, to the following seven-day period. These two weeks are counted from the time of setting.



Error indication

- When the TIMER button is pressed with a cassette loaded and the timer correctly programmed, the TIMER indicator on the display will light with the corresponding preset program number(s) also lighting and the power is turned off.
- When you have preset several programs at a time, confirm that all the preset program numbers light together with the TIMER indicator when the TIMER button is pressed. The program whose number does not light has not been correctly preset. Recheck the programmed data.
- If all programs have been wrongly preset, the TIMER indicator will blink for about 10 seconds when the TIMER button is pressed, and then the Timer Standby mode will be cancelled.
- If the TIMER button is pressed when a cassette is not loaded, the TIMER indicator will continue blinking. Also, a programmed timer recording will not be executed after the start time has passed, even if you insert a cassette.
- If a cassette with its safety tab removed has been loaded, it will be ejected automatically when the TIMER button is pressed. The TIMER and indicators will continue blinking.
- As long as the TIMER button is engaged with the TIMER indicator lit, unloading of a cassette is not possible.

Timer operation

- Tape loading starts 20 seconds before the preset start time and the recording start signal is triggered 2 seconds before the preset time so that recording starts exactly at the preset time.
- During timer recording, the number of the program that is presently operating will be blinking.
- After timer recording, the power is switched off and the auto-rewind mechanism does not function. If the end of the tape is reached during timer recording, the cassette is automatically ejected and then the power is switched off with the TIMER indicator blinking.
- If a power failure should occur, not only time-keeping stops (see page 19), but also all the preset data will be cancelled. (A blinking SU 12:00 AM indicates this after power has been reapplied.) In such cases, first correct the time indication and then re-enter the programming data.

Checking the programmed data

- Checking can be performed anytime, even after the TIMER button has already been engaged. To do this, press the recorder's MENU button while in the Timer Standby mode. The program number will blink on the FDP and you can check each program by advancing program numbers with the SET button. If re-programming is required, disengage the Timer Standby mode and use the regular on-screen programming method.

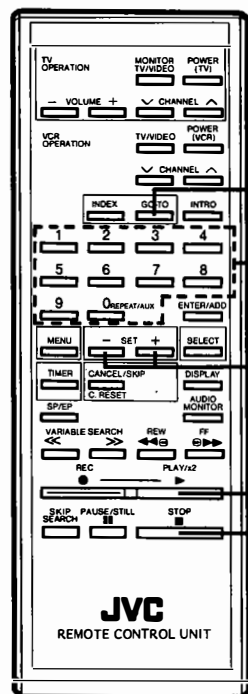
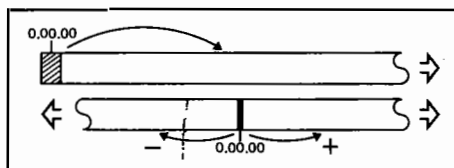
REALTIME TAPE COUNTER FUNCTIONS

Unlike usual tape counters which show tape locations in numbers, this realtime tape counter shows tape time precisely in hours, minutes and seconds in all modes (Record, Play, Rewind, Fast Forward).

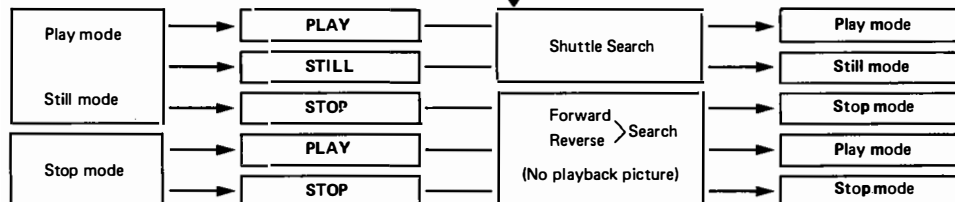
Realtime Go-To and Search

The Time Go-To function can be operated in two ways:

- ①: To locate any point on the tape a specified time away from the beginning of the tape.
- ②: To locate any point on the tape a specified time away from the current position in either direction.



- 1 Press the GO-TO button while in the Play, Stop or Still mode.
 - The counter on the FDP will change to the Go-To mode, and the corresponding indication will appear on the screen.
 - "GO-TO -H--M--S" will appear if the recorder did not detect the leader tape when the cassette was loaded.
 - GO-TO 0H02M32s" (for example) will appear if the recorder has already detected the leader tape, to show the current tape counter reading in terms of realtime from the tape's beginning.
- 2 Press the SET "-" button (for reverse direction: "-" appears in front of the first "0") or press the SET "+" button (for forward direction: no indication).
 - The counter resets to "0H 00M 00s".
- 3 Specify the time to the point to be located, by using the numeric keys.
 - Always key in a full number.
- 4 Press the PLAY/X2 or STOP button (or the PAUSE/STILL button, if either the Play or Still mode is already engaged).
 - Depending on the situation, search will take place either in the Shuttle Search mode or in the Rewind or Fast Forward mode which is much faster than the Shuttle Search mode. After the specified point is reached, playback starts automatically, the tape stops automatically or enters the Still mode, depending on the command.
 - If the recorder did not detect the leader tape when the cassette was loaded, the tape first goes to its beginning, with "GO-TO -H--M--S" appearing again, and then moves to the specified point.

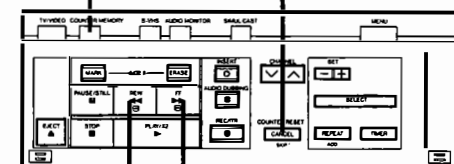
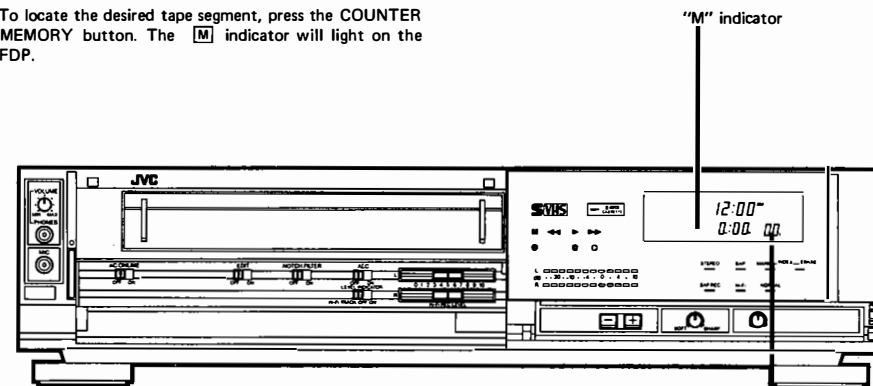


- Notes:**
- Each step in the operation procedure must be followed by the next within 60 seconds, otherwise the Go-To or Search mode will be cancelled.
 - If the specified time exceeds the tape length, the tape fast forwards to the end and then rewinds to the beginning and stops.
 - Use of other control buttons, while in either the Time Go-To or Search mode, cancels that mode.

Counter Memory Function

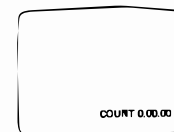
You can use the COUNTER MEMORY button to automatically locate and stop at the beginning of any one program or segment on the tape from the Fast Forward or Rewind mode.

- 2 To locate the desired tape segment, press the COUNTER MEMORY button. The "M" indicator will light on the FDP.



- 1 Press the CANCEL/COUNTER RESET button at a point which you wish to locate later. Count indicator will show "0H 00M 00s" on the FDP and "COUNT 0.00.00" will appear on the screen.

ON-SCREEN DISPLAY



- 3 Press FF or REW button in the Stop mode. The tape will return to the point where the CANCEL/COUNTER RESET button was pressed ("0.00.00") and will stop automatically.

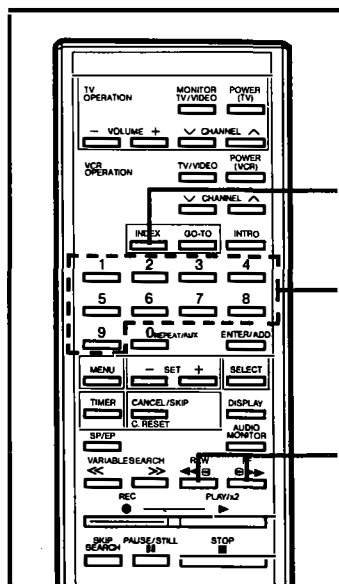
Lap Time Indication

When you need to know the exact time of a recording, press the CANCEL/COUNTER RESET button before starting recording or playback. The counter will be reset to "0H 00M 00s" and show the exact elapsed time as the tape runs. Press the DISPLAY button anytime to check the current tape time position on the screen.

INDEX SEARCH FUNCTION

The Index Search function gives you automatic access to the beginning of individual recordings on the cassette tape. An Index Code is automatically placed on the tape control track each time a recording is begun. You can access any one of up to 9 of these indexed segments in either the forward or reverse direction.

Using the Index Search function

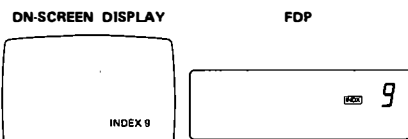


- 1 Press the INDEX button (on the remote control) while in the Play or Stop mode.

- The channel display of the FDP will change to the Index Search mode and "INDX" will light. "INDEX" will appear on the screen.

- 2 Specify the index number using one of the numeric keys (1-9) within 10 seconds.

- The specified number will appear in the FDP and on the screen.



- 3 Press either FF or REW.

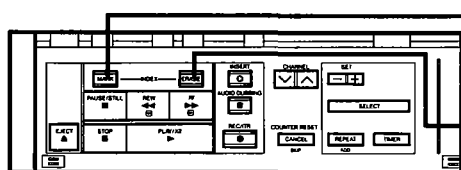
- The tape will move and the index numbers count down to 0, where normal playback will start.
- If the INDEX button was pressed in the Play mode, the screen shows search pictures; if the button was pressed in the Stop mode, the index codes are detected in the Rewind or Fast-Forward mode.

Notes:

- To cancel the Index Search mode before completion, press the PLAY or STOP button.
- If the end of the tape is reached while still in the Index Search mode, the mode is cancelled and the tape rewound.

Changing the index codes

Index codes are automatically placed at the beginning of recordings which are started from the Stop or Timer mode. You can use the MARK button to add extra codes, and the ERASE button to erase codes. In neither case is there any effect on the audio or video recordings on the tape.



MARK

In the Play or Record mode, press this button once to put an index code onto the tape. "MARK" appears and blinks on the screen and the LED blinks during the marking process.

ERASE

In the Play or Still mode, press this button to erase the next index code. The tape is automatically fast-forwarded and when an index code is detected, it will be erased automatically. "ERASE" on the screen and the LED remain lit during the searching process and blink during the erasing process.

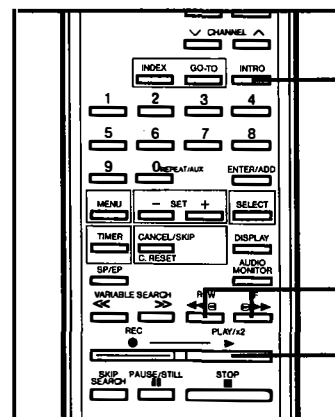


Notes:

- Index codes cannot be added or erased on a tape with its safety tab removed.
- While the index code is being searched for in the Erase mode, random noise appears on the screen as the tape runs at high speed. This is not due to any defect of the unit.
- The Erase mode is cancelled either after one index code has been erased or the Play mode is cancelled.
- Changing the index codes in the vicinity of switching points between SP and EP recordings will distort the pictures.

INTRO SEARCH FUNCTION

The Intro Search function lets you visually check the contents of each recording by playing back in fast motion a short segment of a program each time an index code is detected.



- 1 Press the INTRO button while in the Play or Stop mode.

- "INDEX" will appear on the screen. (The INDX indicator on the FDP will light.)

- 2 Press the FF or REW button within 2 seconds.

- The Intro Search will start in the corresponding direction.
- Each time an index code is detected, the corresponding part is played back at the search speed (7 times normal in SP and 21 times normal in EP mode) for about 5 seconds.

- 3 When you find the section you want to view, simply press the PLAY/X2 button.

- Normal playback will start.

NEXT-FUNCTION MEMORY

Memory Play function

- If you want to watch the tape from its beginning after rewinding, press the REW button and then PLAY/X2 within 2 seconds. Playback will start automatically at the beginning of the tape. (Check to see that the counter memory indicator [M] is off.)
- If you want to watch the tape from the counter reading of "00 00M 00S", press the COUNTER MEMORY button to obtain [M]. Then, press the REW (or FF) button and then PLAY/X2.
- While the tape is being rewound, the PLAY indicator is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (STOP, PLAY/X2, FF, REW).

Memory Eject/Power-Off/Timer Standby

- If you are going to eject the cassette, turn the power off or engage the Timer Standby mode after rewinding the tape, you don't have to wait for completion of rewind to press the corresponding button.
- To eject the cassette after rewind, press REW and then EJECT within 2 seconds. (To cancel the Memory Eject mode, press STOP.)
 - To turn the power off after rewind, press REW and then POWER within 2 seconds. (To cancel the Memory Power-off mode, press POWER.)
 - To engage the Timer Standby mode after rewind, press REW and then TIMER within 2 seconds. (To cancel the Memory Timer Standby mode, press TIMER.)

Memory Play	REW/FF	→	PLAY/X2		Blinking	→	Play mode
Memory Eject	REW	→	EJECT		Blinking	→	Cassette ejected
Memory Power-off	REW	→	POWER		Blinking	→	Power off
Memory Timer Standby	REW	→	TIMER		Lights	→	Timer standby mode

within 2 seconds

INSERT EDITING

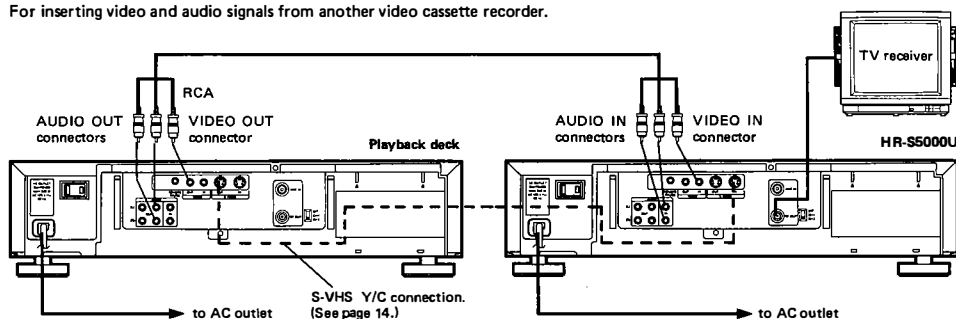
Insert editing means recording a new scene into a section of pre-recorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at edit-in and edit-out points. Thanks to the flying erase head, clean edits can be obtained. New video and audio signals to be inserted can come either from another video cassette recorder or the built-in tuner.

CAUTION

Since video and audio signals are recorded simultaneously, both are replaced with new recordings simultaneously. However, the normal audio soundtrack remains unchanged.

Connection

For inserting video and audio signals from another video cassette recorder.



Procedure

- Switch on the TV receiver.
- Set the TV receiver in the appropriate mode.
- Load a pre-recorded cassette.
- Press TV/VIDEO to engage the VIDEO mode (the indicator lights, if necessary. (See page 10.))
- Press the SIMULCAST, AUX ("0" on the remote control) and S-VHS buttons as required. (See chart above.)
- Set the Hi-Fi audio recording level. (See page 17.)
- Play back the tape to determine the edit-out point (the end of the tape section to be replaced).
- Press the PAUSE/STILL button at the edit-out point.
- Press the COUNTER RESET button.
 - The counter will be reset to "0H 00M 00S".
- Press the REW button to determine the edit-in point (the beginning of the tape section to be replaced).
- Press the PAUSE/STILL button at the edit-in point.
- Press the INSERT button.
 - This engages the Insert Standby mode in which the input signal can be monitored on the TV screen; the still picture changes into the input signal that you are going to record.
 - The input sound signal can also be monitored.
- Operate the source equipment properly.
 - Play back on another recorder the tape program to be inserted.
 - Select the channel to be recorded.
 - Select the channel and set the FM tuner.
- Press the PLAY/X2 button to start insert editing.
 - Now video and audio signals will be recorded simultaneously.

Setting options of the relevant buttons

Source	Button	SIMULCAST and AUX buttons
To insert programs from a different tape		AUX (with S-VHS set as required - see page 8)
To insert TV programs from the built-in tuner		TUNER (SIMULCAST button pressed to OFF)
To insert FM simulcast programs		SIMULCAST (button pressed to ON)

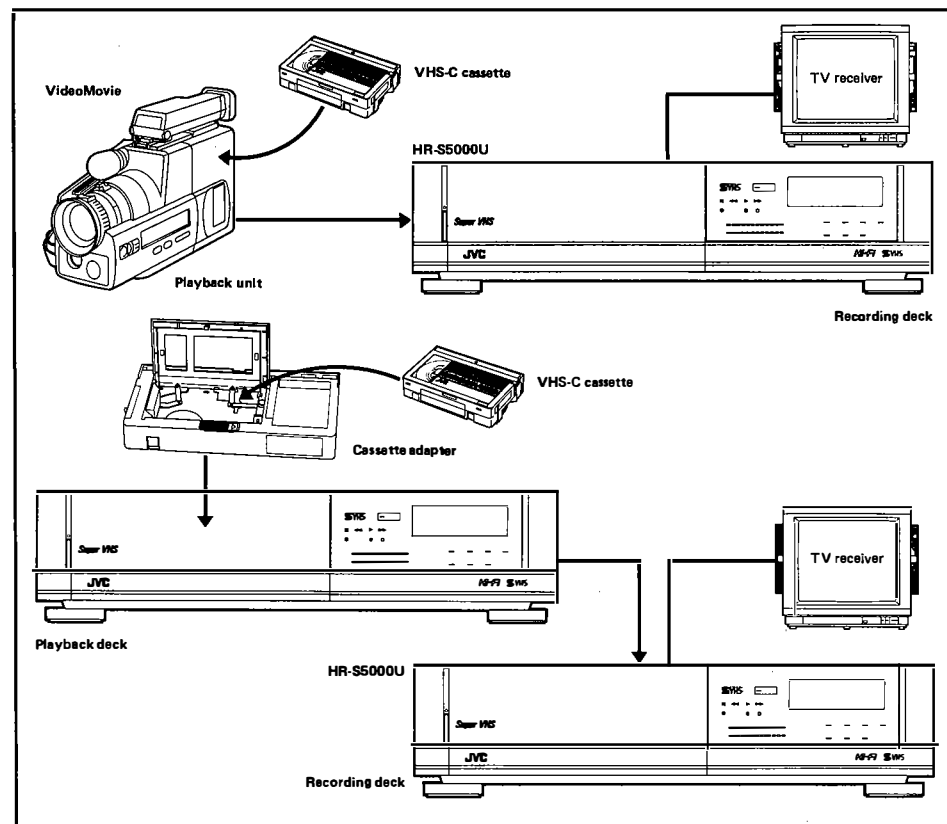
- At the counter reading of "0H 00M 00S", recording will stop automatically.
- The tape will continue running in the Play mode.

Notes:

- Do not use the STOP button to stop insert editing. If you press the STOP button, the tape stops and the Insert Edit mode is cancelled.
- If you wish to stop insert editing before the specified edit-out point is reached, press the COUNTER RESET button. Then the Play mode will be entered.
- Insert editing is also possible without determining the edit-out point. Simply start insert editing at the edit-in point and, where you wish to stop insert editing, press the PAUSE/STILL button. Since this recorder incorporates a flying erase head, even this simplified procedure makes clean edits, though there may be a slight discrepancy between the actual and intended edit points.
- The recording mode (SP or EP) is automatically determined by the previous recording on which the new segment is inserted regardless of the setting of the SP/EP button.
- If the edit start point of the new scene lies in the SP mode and the edit end point of the same scene lies in the EP mode or vice versa, the inserted picture will distort at the switching point in the recording mode.
- If there is a non-recorded section on the tape, the Insert Edit mode will be cancelled automatically and the Play mode will be engaged.
- Insert editing is not possible with non-recorded cassettes or cassettes whose safety tab has been removed.

TAPE-TO-TAPE EDITING

VideoMovie recordings can be edited by using a VideoMovie camcorder (with playback facility) or a 2nd video deck. Through use of a cassette adapter, VideoMovie recordings can be treated just like regular VHS cassettes.



- Connect the playback deck's VIDEO OUT and AUDIO OUT connectors (or the VideoMovie's AV OUT) to the recording deck's VIDEO IN and AUDIO IN connectors.
- Set the recording deck's SOURCE setting to AUX.
- Press the recording deck's S-VHS button as required.
- Put the playback deck in the Play mode.
- Put the recording deck in the Record mode.

Notes:

- For S-VHS editing, also refer to page 14.
- For monaural audio connection, use the AUDIO IN L connector.

Tips for obtaining better results

The quality of the edited tape may vary depending on the position of the EDIT switch. It is recommended that you first make some trial recordings.

- With the EDIT switch of the playback deck set to ON and recording deck to OFF,
- With the EDIT switch of both playback and recording decks set to ON, and
- With the EDIT switch of both decks set to OFF.

Choose the setting combination that best suits your preference.

Note: Also refer to the instruction manual of the 2nd video recorder you are using.

AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape. In other words, the previously recorded sound is erased and replaced with a new soundtrack. **Audio dubbing is applicable only to the longitudinal audio track (normal audio).** Therefore, a dubbed narration can be heard together with the original hi-fi sound.

Procedure

- Switch on the TV receiver.
 - Set the TV receiver in the appropriate mode.
- Load a pre-recorded cassette. Power will be switched on automatically.
- Connect a microphone or an audio source to the MIC jack or the AUDIO IN connectors respectively.
 - With both microphone and audio source connected, mixed sound is recorded.
- Press "0" of the numeric keys on the remote control to switch to AUX.
 - If you record sound only from the microphone, the source equipment connected to the AUDIO IN connectors should be off.
- Press the PLAY/X2 button to start playback and then press the REW or FF button to search for the point from which you wish to start audio dubbing.
- Press the PAUSE/STILL button at the start point of audio dubbing.
- Press the AUDIO DUB button.
- Press the PLAY/X2 button.
 - Audio dubbing will start.

Notes:

- It is recommended that you use a lower-impedance microphone.
- If a stereo source is connected to the AUDIO IN connectors, the mixed L and R sound is recorded.

- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the microphone farther away from the TV. Recording is being performed even if sound is not heard from the TV receiver. If you want to monitor the sound being recorded, connect headphones to the PHONES jack.

RECORDING WITH A VIDEO CAMERA

Connection

To connect a video camera, an appropriate camera adapter is necessary.

- Connect the video camera to the camera adapter.
- Connect the camera adapter to the HR-S5000U: adapter's VIDEO OUT to recorder's VIDEO IN, adapter's AUDIO OUT to recorder's AUDIO IN, and adapter's PAUSE to recorder's REMOTE PAUSE.

For proper connection of a camera to the HR-S5000U, consult a JVC dealer.

Operation

1. Turn the power on for all connected equipment.
2. Set the TV receiver in the appropriate mode.
3. Load a cassette.
4. Set the SOURCE setting to AUX and the S-VHS button as required.
5. Press the TV/VIDEO button to obtain the VIDEO indication on the FDP, if necessary (See page 10.)
6. Select the REC SPEED as required.
7. Press the REC/ITR and then the PAUSE/STILL button.
 - The recorder enters the Recording Standby mode.
8. Operate the camera's start/stop switch.
 - Recording starts and stops with this switch.
9. To end the recording, press the STOP button.

Notes:

- If feedback noise (whistling or howling) is heard from the TV receiver, reduce the volume or move the camera's microphone farther away from the TV receiver.
- For camera operation refer to the instruction manual for the relevant camera.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . .

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	<ul style="list-style-type: none"> ● Is the power cord disconnected? <ul style="list-style-type: none"> — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	<ul style="list-style-type: none"> ● Is the TIMER indicator lit on the FDP? <ul style="list-style-type: none"> — Press the TIMER button to turn off the indicator.
Tape does not run during recording.	<ul style="list-style-type: none"> ● Is the PAUSE/STILL button pressed to ON? <ul style="list-style-type: none"> — Press the PLAY/X2 button.
Tape stops in the Rewind or Fast Forward mode.	<ul style="list-style-type: none"> ● Is the COUNTER MEMORY function engaged? <ul style="list-style-type: none"> — Set it to OFF.
Tape will not rewind or fast forward.	<ul style="list-style-type: none"> ● Is the tape already fully rewound or fast forwarded? <ul style="list-style-type: none"> — Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	<ul style="list-style-type: none"> ● Is a cassette loaded? ● Is the safety tab on the cassette removed? <ul style="list-style-type: none"> — Reseal the slot with cellophane tape.
TV broadcasts cannot be recorded.	<ul style="list-style-type: none"> ● Is the SOURCE selection set to AUX or SIMUL? <ul style="list-style-type: none"> — Set it to TUNER.
Camera recording is not possible.	<ul style="list-style-type: none"> ● Are the camera and the camera adapter correctly connected? ● Is the power switch of the camera adapter set to ON? ● Is the SOURCE selection set to TUNER or SIMUL? <ul style="list-style-type: none"> — Set it to AUX.
Simulcast recording is not possible.	<ul style="list-style-type: none"> ● Is the SOURCE selection set to TUNER or AUX? <ul style="list-style-type: none"> — Set it to SIMUL. ● Is an audio source correctly connected to the AUDIO IN connectors? <ul style="list-style-type: none"> — Check connections.
Timer recording is not possible.	<ul style="list-style-type: none"> ● Have you set the clock correctly and programmed the timer correctly? <ul style="list-style-type: none"> — Check once again. ● Is the TIMER indicator lit on the FDP? <ul style="list-style-type: none"> — If not, press the TIMER button to light the indicator.

HI-FI AUDIO PROBLEMS

Symptoms	Check points
TV sound cannot be recorded on hi-fi audio tracks.	<ul style="list-style-type: none"> ● Is the SOURCE selection set to SIMUL? <ul style="list-style-type: none"> — Set it to TUNER.
Breaks are noticeable in hi-fi audio reproduction.	<ul style="list-style-type: none"> ● Adjust with the TRACKING control buttons. (See page 18.)
Soundtrack on the hi-fi audio track cannot be reproduced.	<ul style="list-style-type: none"> ● Is the AUDIO MONITOR select button set for NORMAL? <ul style="list-style-type: none"> — Set it for Hi-Fi.
Audio level indicators do not function.	<ul style="list-style-type: none"> ● Is the LEVEL INDICATOR switch set to OFF? <ul style="list-style-type: none"> — Set it to ON.

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	<ul style="list-style-type: none"> Is the TV receiver's mode or channel selector correctly set? <ul style="list-style-type: none"> Set to AV (VIDEO) mode or RF converter channel (3 or 4) as required. (See page 10.)
Noise appears on the search and still pictures.	<ul style="list-style-type: none"> This is normal.
Noise appears during normal playback.	<ul style="list-style-type: none"> Adjust the TRACKING control buttons.
Playback picture is blurred or interrupted while TV broadcasts are clear.	<ul style="list-style-type: none"> Video heads may be dirty. <ul style="list-style-type: none"> Head cleaning is necessary. Consult your nearest JVC dealer.

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	<ul style="list-style-type: none"> Move camera's microphone away from TV or reduce TV sound volume.
Clock setting is not possible.	<ul style="list-style-type: none"> Is the TIMER indicator lit on the FDP? <ul style="list-style-type: none"> Press the TIMER button to turn off the indicator.
Some channels are skipped over when scanning channels.	<ul style="list-style-type: none"> Those channels are preset to be skipped over. If you need them, restore them. (See page 21.)
Channel cannot be switched.	<ul style="list-style-type: none"> Is recording in progress? <ul style="list-style-type: none"> Press the PAUSE/STILL button, select a desired channel and press the PLAY/X2 button.
Snowy picture on screen when viewing TV programs while recording another program.	<ul style="list-style-type: none"> What is your VCR/TV connection? <ul style="list-style-type: none"> If RF-only connection is used, is the VIDEO indicator lit? <ul style="list-style-type: none"> Press the TV/VIDEO button so that the indicator extinguishes.

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. After a few minutes plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV program received is clear. This does not mean that the recorded program has been erased.
- Dirt accumulated on the video heads after long periods of use causes such troubles. In this case, head cleaning requiring highly technical care is necessary.

* For head cleaning, consult the nearest JVC dealer.

SPECIFICATIONS

Format	: S-VHS/VHS NTSC standard with Hi-Fi audio	Hi-Fi audio	Frequency response	: 20 Hz to 20,000 Hz
Video recording system	: Rotary, two-head helical scan system with slant double-azimuth combination video heads		Dynamic range	: More than 90 dB
Hi-Fi audio recording system	: Deep-layer recording system conforming to stereo Hi-Fi VHS standard		Wow and flutter	: Less than 0.005 % WRMS
No. of audio channels	: 2 Hi-Fi audio channels 1 normal audio channel		Timer	: 14-day programmable timer 8 programs with repeat function
Video signal system	: NTSC-type color signal and separated Y/C signals conforming to NTSC.	Dimensions	: 435 mm(W) x 105 mm(H) x 380mm(D) (17-3/16" x 4-3/16" x 15")	
Tape width	: 12.65 mm (1/2 inch)	Weight	: 8.1 kg (17.9 lbs)	
Tape speed	(SP) : 33.35 mm/s (1-5/16 ips) (EP) : 11.12 mm/s (7/16 ips)	Provided accessories	: Infrared remote control unit "AAA"-size battery x 2 S-VIDEO cable (4-pin) Matching transformer Antenna cable (F-type) Audio cable Video cable	
Maximum recording time	(SP) : 160 min. with T-160 video cassette (EP) : 480 min. with T-160 video cassette	<i>Specifications shown are for SP mode unless otherwise specified. Design and specifications subject to change without notice.</i>		
Temperature				
Operating	: 5°C to 40°C (41°F to 104°F)			
Storage	: -20°C to 60°C (-4°F to 140°F)			
Antenna	: 75 ohms, unbalanced			
Channel coverage	(VHF) : Channels 2 — 13 (UHF) : Channels 14 — 69 (CATV) : 87 channels			
RF output signal	: Channel 3 or 4 (switchable; preset to channel 3 when shipped) 75 ohms, unbalanced			
Power requirement	: AC 120 V~, 60 Hz			
Power consumption	: 42 W			
Video				
Input	: 0.5 to 2.0 Vp-p, 75 ohms, unbalanced			
Output	: 1.0 Vp-p, 75 ohms, unbalanced			
Signal-to-noise ratio	: 45 dB (Rohde & Schwarz noise meter) with PICTURE SHARPNESS control at center position			
Horizontal resolution	: More than 400 lines (S-VHS)/240 lines (VHS) with PICTURE SHARPNESS control at center position			
Audio				
Input	: -8 dBs, more than 50 k-ohms, unbalanced			
Output level	: -6 dBs, high impedance load			
Output impedance	: Less than 1 k-ohm, unbalanced			
Signal-to-noise ratio	: More than 40 dB (Normal audio)			
Frequency range	: 70 Hz to 10,000 Hz (Normal audio)			

SECTION 1

MECHANISM ADJUSTMENT

1.1 GENERAL

1.1.1 Precautions

IMPORTANT:

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it.
3. The tape transport mechanism has been precisely adjusted at the factory and ordinarily does not require readjustment.
4. When removing a part, be very careful not to damage or displace other parts. (Be especially careful with the tape guides and rotary video head drum.)
5. For service procedures that call for operation of the set when the cassette housing is separated from the main-deck, perform as below.
 - 1) Set a sheet of insulated material on the right of the chassis.
 - 2) Remove the cassette housing from the main-deck and place it on the insulated sheet, but do not disconnect the connector from the MECHACON board.
 - 3) Insert a cassette into the cassette housing. The housing mechanism functions to retract the cassette.
 - 4) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
 - 5) The desired modes can be obtained by using the operation switches.

1.1.2 Required test equipment, fixtures and tools

For proper mechanical adjustment, the following test equipment, fixtures and tools are strongly recommended. Without them, a long trial-and-error period would be necessary, resulting in possible damage. In addition, general-purpose tools are required.

1. Test equipment required:

Color television or monitor

Oscilloscope: Wide-band, dual trace, triggered, delayed sweep

Recording tape

Alignment tapes

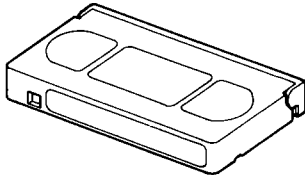
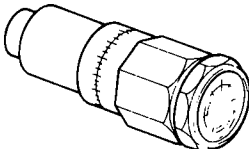
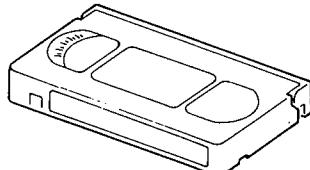
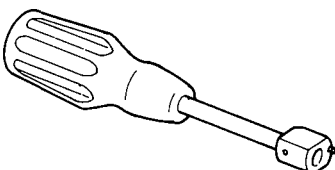
Alignment tape MF-1, MH-1L, MH-F1 	Torque gauge assembly PUJ48075-2 	Back tension cassette gauge PUJ48076-2 
A/CTL head position tool PUJ47351-2 		

Table 1-1-1 Fixtures and tools

1.1.3 Disassembly

1. Top cover

- 1) Take out five screws from the right, left and rear sides of the set.
- 2) Tilt up the rear end of the top cover, then remove it.

2. Front panel

- 1) Remove the top cover.
- 2) Carefully bend three upper hooks of the front panel assembly upward to disengage them from their chassis retainers.
- 3) Disengage three lower hooks of the front panel assembly from their chassis retainers in order to remove the front panel assembly.

3. Bottom cover

- 1) Take out three screws from the bottom side of the set.
- 2) Take out four screws and four foot assembly from the bottom side of the set, then remove the bottom cover.

4. Cassette housing door

- 1) Remove the front panel assembly.
- 2) Bend center of the cassette housing door toward you, then pull out the right end from the cassette housing.
- 3) Use care regarding the torsion spring, then pull out the left end of the cassette housing door to remove it.

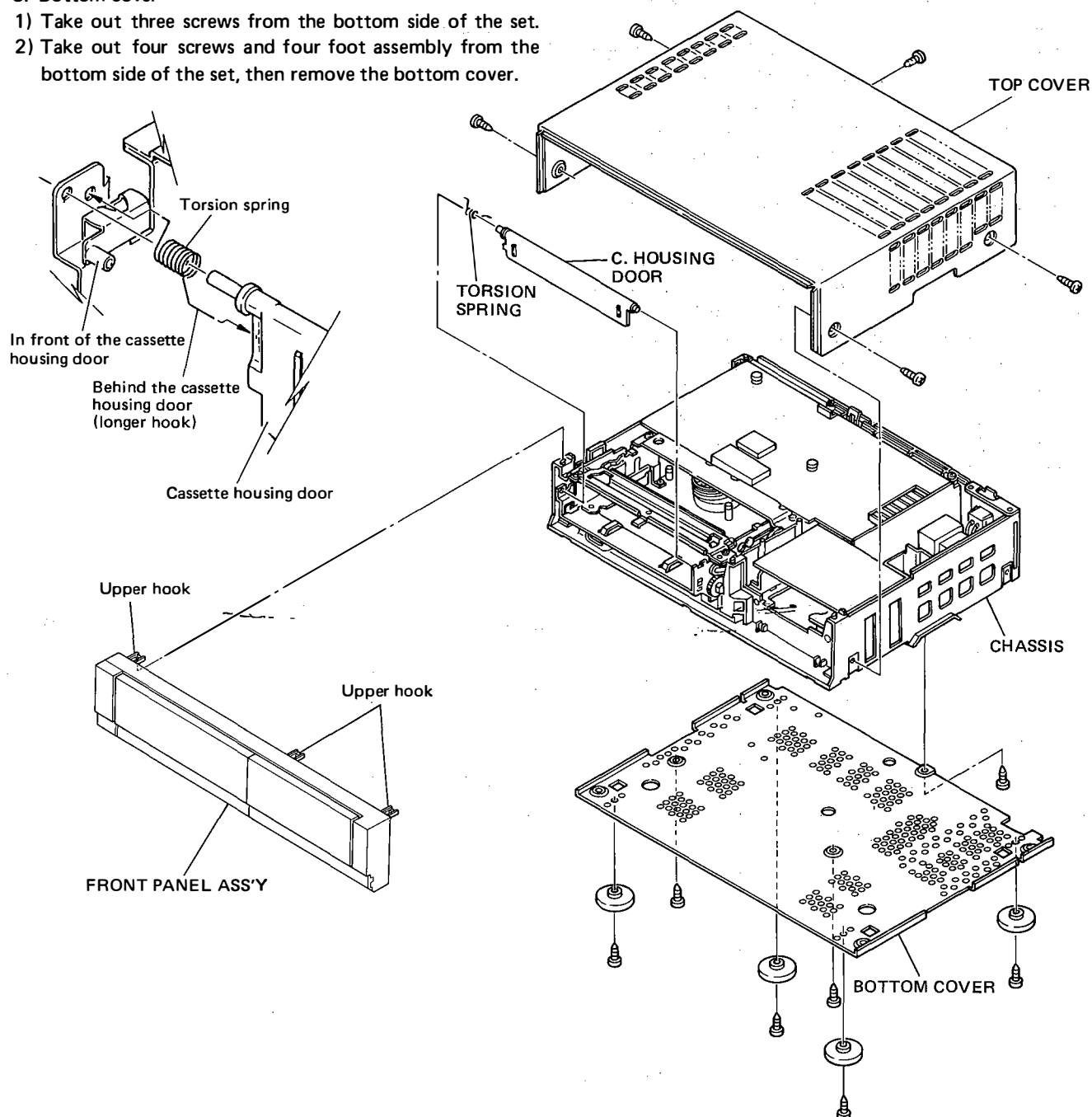


Fig. 1-1-1 Removal of external covers

1.1.4 Layout of main parts

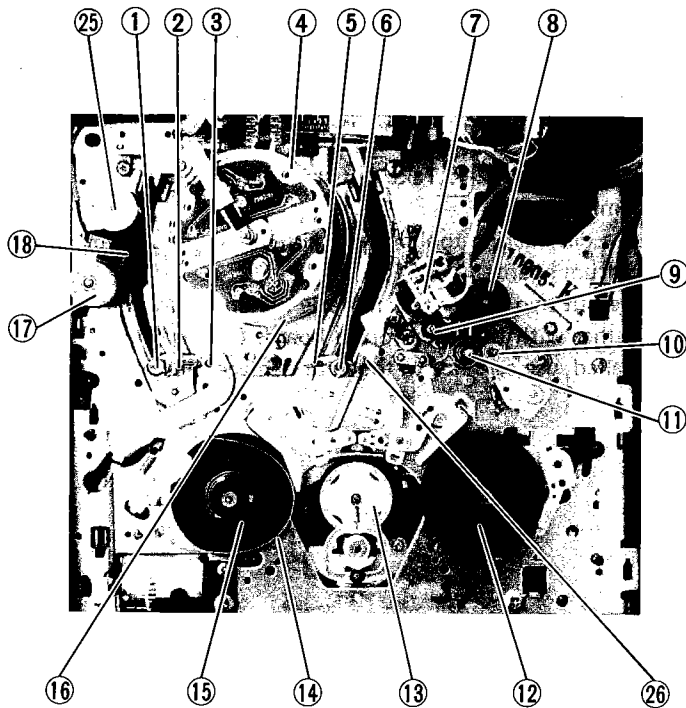


Fig. 1-1-2 Top view of main-deck

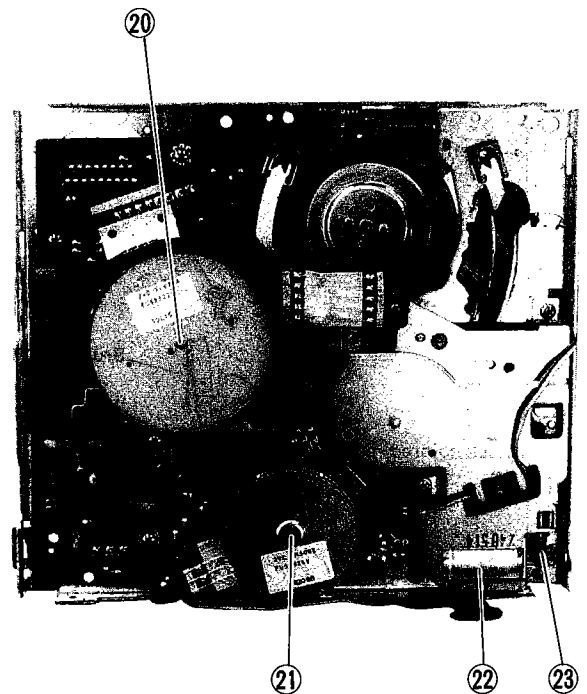


Fig. 1-1-3 Bottom view of main-deck

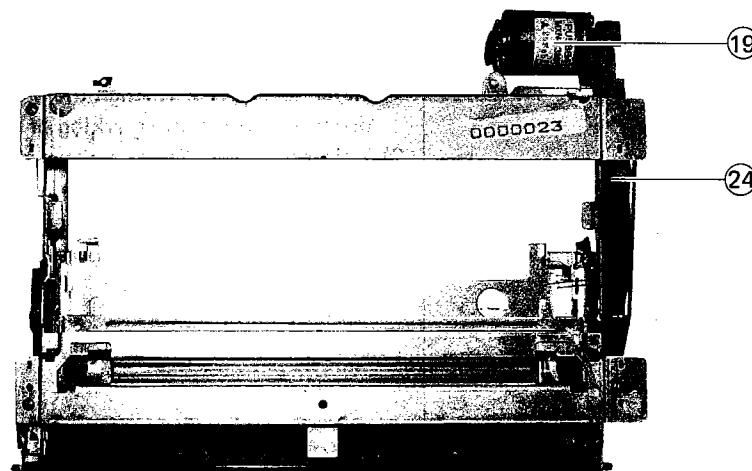


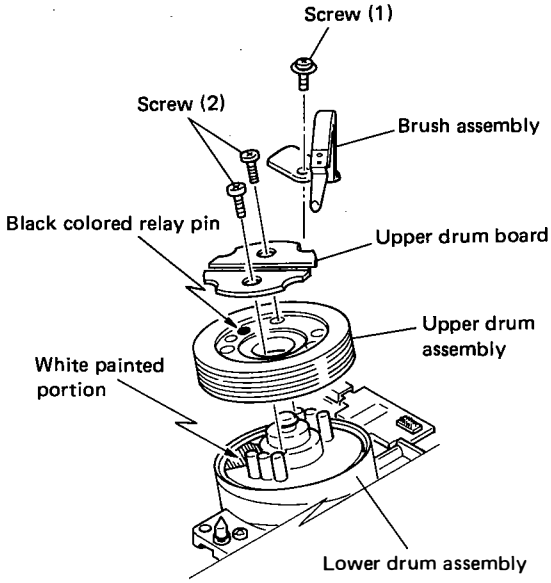
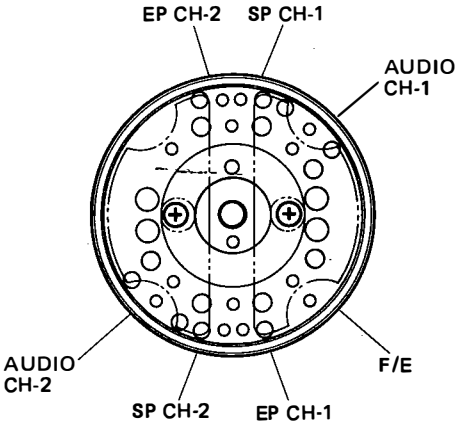
Fig. 1-1-4 Cassette housing

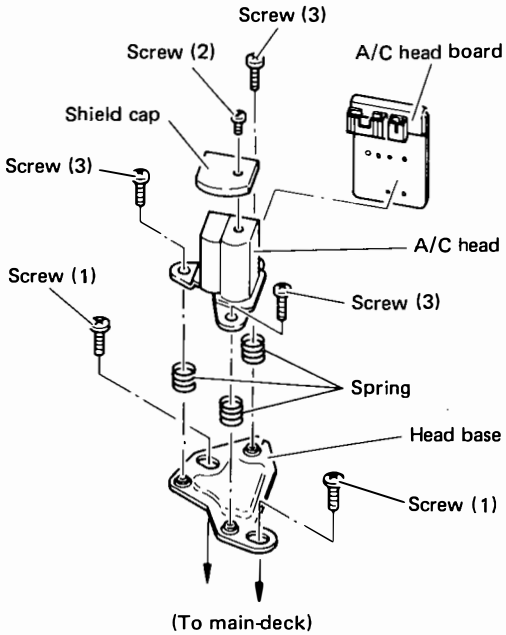
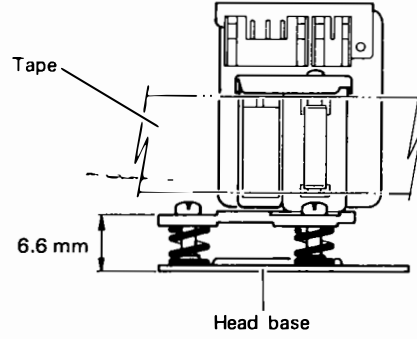
1. Supply guide roller
2. Supply slant pole
3. Tension pole
4. Upper drum
5. Take-up slant pole
6. Take-up guide roller
7. A/C head
8. Pinch roller

9. Take-up guide pole
10. Guide arm
11. Capstan
12. Take-up reel disk
13. Reel idler
14. Tension band
15. Supply reel disk
16. Lower drum

17. Impedance roller
18. Full erase head
19. Cassette motor
20. Capstan motor
21. Reel motor
22. Mode motor
23. Mode belt
24. Cassette belt
25. Roller
26. Half loading arm

1.2 MAIN ASSEMBLY REPLACEMENT

No.	Item	Adjustment parts	Operating mode	Description
1	Upper drum assembly — Removal —			<p>Note: When installing the new upper drum, use care not to touch the video heads. If heads are soiled, clean with a soft, finely woven cotton cloth or chamois that has been moistened in alcohol. Hold lightly against the heads and turn the drum clockwise. By no means clean with a vertical stroke.</p> <ol style="list-style-type: none"> 1) Refer to Fig. 1-2-1. Take out screw (1) and remove the brush assembly. 2) Use a desoldering tool or desoldering braid to unsolder the upper drum boards. 3) Take out two screws (2) and raise the upper drum to remove it together with the upper drum board. (If this drum is to be re-installed, use care not to touch or damage the heads.)
	— Installation —	 <p>Fig. 1-2-1 Upper drum assembly</p>		<ol style="list-style-type: none"> 1) Refer to Fig. 1-2-1. Align the black relay pin of the new upper drum with the white marking of the lower drum. 2) Reinsert screws (2) and tighten them in a balanced manner. 3) Reinstall and solder the upper drum boards. 4) Clean the drum assemblies (see above note). 5) Reinstall the brush assembly and secure with screw (1).
	— Checks and adjustments —			<p>After installing the upper drum, perform the following checks and adjustments (refer to appropriate Sections of this Manual).</p> <ol style="list-style-type: none"> 1) FM waveform 2) Servo circuit 3) Video circuit 4) FM audio circuit

No.	Item	Adjustment parts	Operating mode	Description
2	<p>A/C head (Audio/Control head)</p> <p>— Removal —</p>  <p>(To main-deck)</p> <p>Fig. 1-2-2 A/C head</p>			<ol style="list-style-type: none"> 1) Disengage connectors attached to the A/C head board. 2) Take out two screws (1) and remove the A/C head together with the head base. 3) Unsolder and remove the A/C head board from the A/C head. 4) Take out screw (2) and remove the shield cap from the A/C head. 5) Take out three screws (3) and remove the A/C head from the head base. Use care regarding the three springs.
	<p>— Installation —</p>  <p>6.6 mm</p> <p>Fig. 1-2-3 A/C head height</p>			<ol style="list-style-type: none"> 1) Install the A/C head by reversing the removal steps of above. 2) Temporarily set the A/C head height above the head base for 6.6 mm (see Fig. 1-2-3).
	<p>— Checks and adjustments —</p>			<ol style="list-style-type: none"> 1) Use a spare tape (not Alignment tape) and confirm proper operation of the tape transport (see Section 1.5). 2) Perform interchangeability adjustment (see Section 1.6).

No.	Item	Adjustment parts	Operating mode	Description
3	Tension band assembly			<p>1) Take out screw (1) and disengage the tension band assembly from the tension arm assembly (see Fig. 1-2-4).</p> <p>2) Remove and replace the tension band assembly.</p> <p>3) Perform tension pole position adjustment (see Section 1.4).</p>

Tension band assembly

Screw (1)

Tension arm assembly

Fig. 1-2-4 Tension band assembly

1.3 ASSEMBLY PROCEDURE OF MECHANISM

No.	Item	Adjustment parts	Operating mode	Description
<p>A close relationship exists between the mode select switch and the mechacon circuit. Therefore, the mode select switch and control arm engagement determines the overall mechanical operations of the levers, gears, rollers, etc. If these parts are not properly positioned, the video deck becomes stalled in the unloading or Stop mode.</p>				
1	Loading arm assemblies			<p>These assemblies are comprised of loading gears, torsion springs and loading arms.</p> <p>1) Refer to Fig. 1-3-1 and install the loading arm assemblies correctly.</p> <p>2) The take-up and supply loading arm positions with respect to the loading gear holes are indicated in Fig. 1-3-2. This configuration is important to allow shifting to the next operation.</p>

Take-up loading arm assembly

Supply loading arm assembly

Fig. 1-3-1 Loading arm assembly (1)

Holes confront each other.

(Black)

(White)

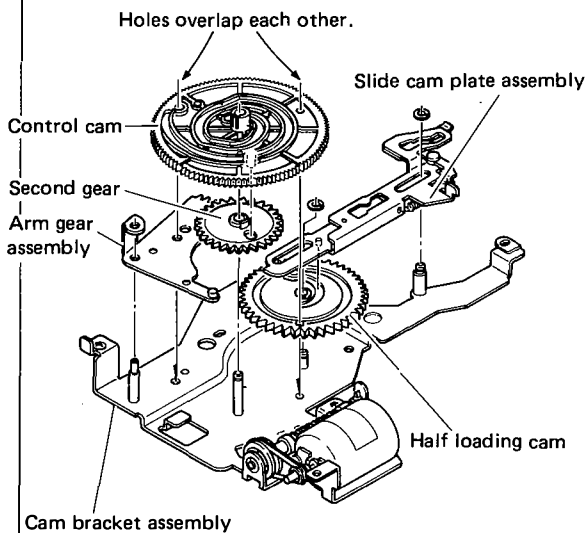
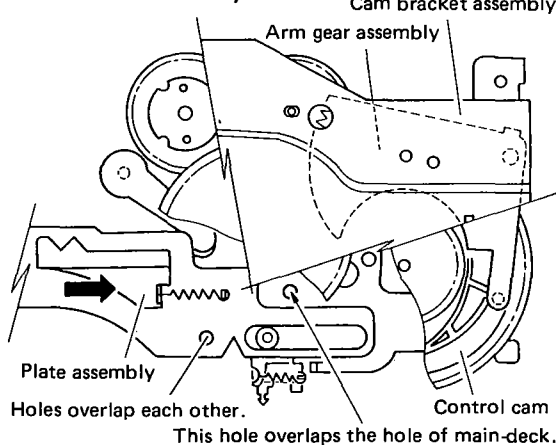
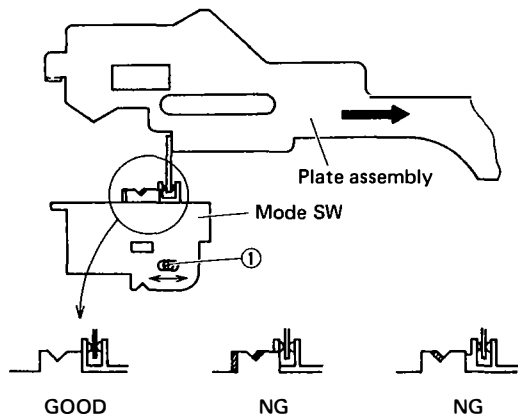
(To supply pole base)

(To take-up pole base)

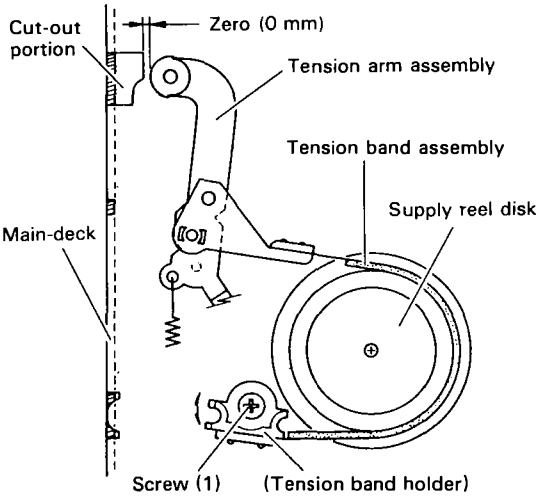
Take-up loading arm assembly

Supply loading arm assembly

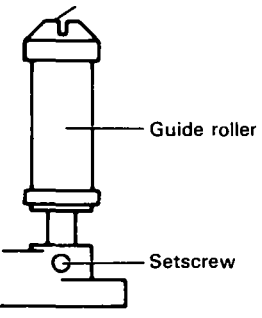
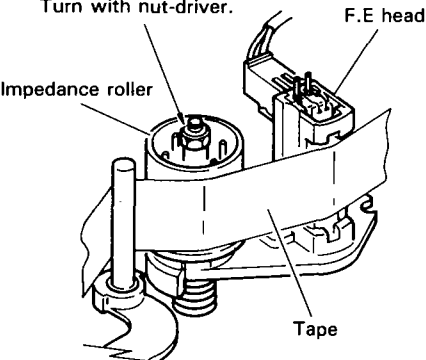
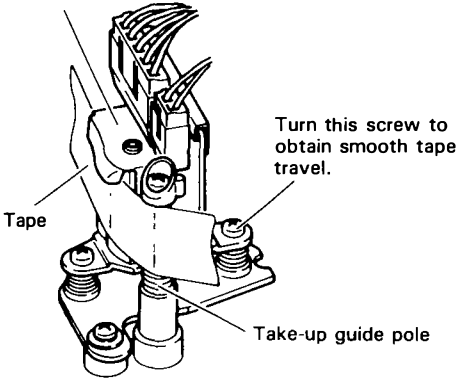
Fig. 1-3-2 Loading arm assembly (2)

No.	Item	Adjustment parts	Operating mode	Description
2	Control cam			<ol style="list-style-type: none"> 1) Install the half loading cam on the cam bracket assembly, then mount the slide cam plate assembly so that its stud sets into the groove on the half loading cam. 2) Install the arm gear assembly on the cam bracket assembly. 3) Assemble the second gear and the control cam so that the stud of the control cam sets into the hole of the second gear. 4) Mount the above assembly (control cam and second gear) on the cam bracket assembly to satisfy the relation indicated in figure. 5) Do not turn the control cam from this position for the next step.
	 <p>Fig. 1-3-3 Control cam</p>			
3	Cam bracket assembly			<ol style="list-style-type: none"> 1) Refer to Fig. 1-3-4 and press the plate assembly toward the right to overlap the indicated hole with that of the main deck. 2) Then install the cam bracket assembly. <p>Note: If the arm and loading gears do not mesh properly, use a jeweler's screwdriver or similar tool to engage the gear teeth while installing the cam bracket assembly.</p>
	 <p>Fig. 1-3-4 Cam bracket assembly</p>			
4	Mode switch position			<ol style="list-style-type: none"> 1) Engage the plate assembly and mode switch as shown in Fig. 1-3-5. Partially tighten screw (1) to where the switch can still be shifted for adjusting the position. 2) Press the plate assembly toward the right to where the holes are overlapped as in Fig. 1-3-4. Insert a jeweler's screwdriver into the holes to keep them aligned. 3) Shift the mode switch to align the V-notch as indicated in Fig. 1-3-5. Then tighten screw (1) to secure. 4) Remove the jeweler's screwdriver, then reinstall and solder the circuit board.
	 <p>Fig. 1-3-5 Mode switch</p>			

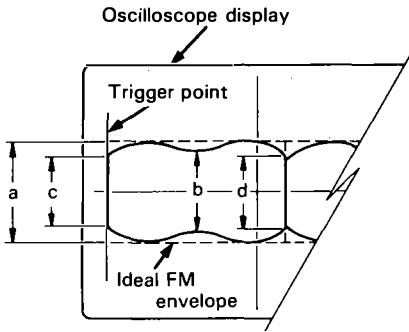
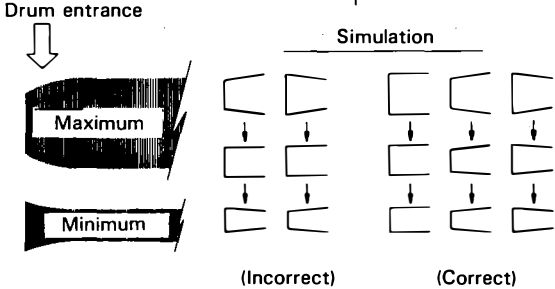
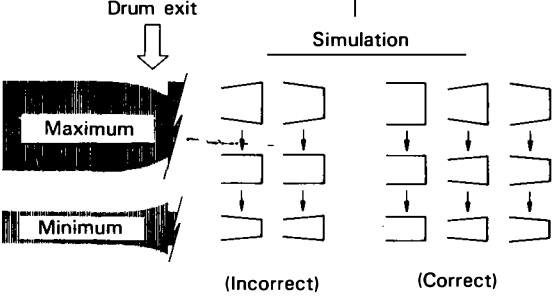
1.4 CONFIRMATION AND ADJUSTMENT

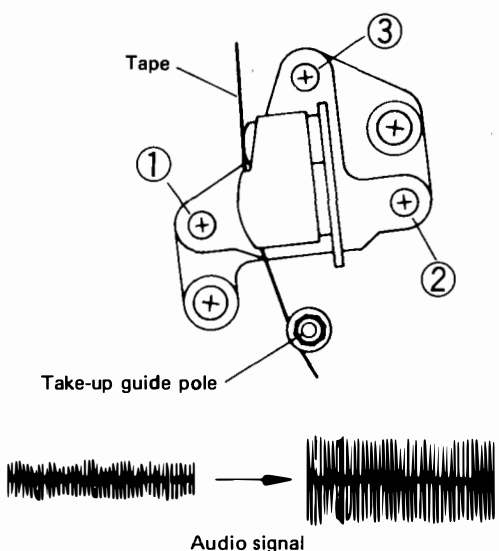
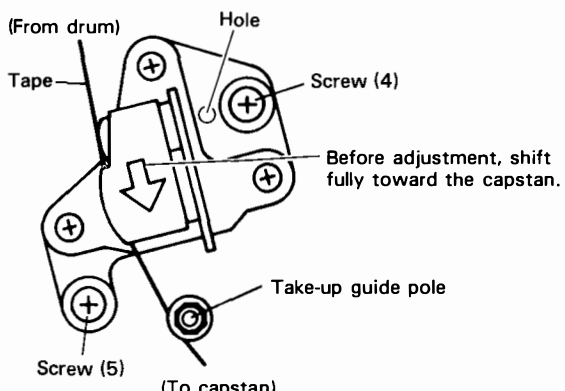
No.	Item	Adjustment parts	Operating mode	Description
1	Tension pole position  <p>Fig. 1-4-1 Tension pole position</p>			<ol style="list-style-type: none"> 1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Refer to Fig. 1-4-1. Slightly loosen screw (1). Adjust the tension band holder position for 0 mm separation between the tension arm and cutout position. 3) Tighten screw (1) to secure the tension band holder. 4) Use the back tension cassette gauge and set for the Play mode. 5) Check for a scale reading between 25 and 75. 6) If outside this range, clean the tension band contacting portions of the supply reel disk with alcohol, or check the condition of the tension arm spring. If necessary, replace the tension band assembly.
2	Take-up torque			<ol style="list-style-type: none"> 1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Set the torque gauge on the take-up reel disk. 3) Grasp the torque gauge lightly so that it rotates and read the value when the scale matches the indicator needle. Confirm a value between 45 and 155. 4) If outside this range, clean the rubber portion of the idler arm with alcohol, or if necessary, check the reel motor drive circuit.

1.5 TAPE TRANSPORT CHECKS AND ADJUSTMENT PREPARATIONS

No.	Item	Adjustment parts	Operating mode	Description
	<p>The tape transport system has been precision-adjusted at the factory and ordinarily does not require readjustment. However, adjustment may become necessary after long term usage or after replacing parts that affect the tape transport. The following steps mainly cover preparations for the interchangeability adjustments of Section 1.6.</p>			
1	Guide roller	<p>Turn with screw-driver.</p>  <p>Fig. 1-5-1 Guide roller</p>		<p>1) During interchangeability adjustments, the guide roller is turned with a flat-blade screwdriver to adjust its height and correct FM waveform linearity. Use a metric hex key (1.25 mm) to slightly loosen the setscrew at the base of the guide roller (see Fig. 1-5-1). Loosen the setscrew just sufficiently to allow the guide roller to be turned. If too loose, tape transport will be too unstable to permit correct adjustment.</p>
2	Impedance roller	<p>Turn with nut-driver.</p>  <p>Fig. 1-5-2 Impedance roller</p>		<p>1) This compensates for tape running stability between the cassette and head drum. After adjusting the supply guide roller, the impedance roller height is adjusted for smooth tape transport at the lower flange.</p> <p>2) Use a metric nutdriver (5.5 mm) to adjust by turning the upper nut (see Fig. 1-5-2). However, note that excess turning can disturb the FM waveform stability.</p>
3	A/C head (audio/control head)	<p>Audio/control head</p>  <p>Fig. 1-5-3 A/C head</p>		<p>1) After adjusting the take-up guide roller, adjust the A/C head inclination for smooth tape travel at the lower flange of the take-up guide pole. Refer to Fig. 1-5-3.</p>

1.6 INTERCHANGEABILITY CHECKS AND ADJUSTMENTS

No.	Item	Adjustment parts	Operating mode	Description
Before using costly Alignment tape, use a spare tape and confirm correct operation of the tape transport.				
1	<p>FM waveform</p> $\frac{b}{a} \geq 0.7, \frac{c}{a} \geq 0.5 \text{ and } \frac{d}{a} \geq 0.5$  <p>Fig. 1-6-1 FM envelope</p>  <p>Fig. 1-6-2 Drum entrance</p>  <p>Fig. 1-6-3 Drum exit</p>			<ol style="list-style-type: none"> 1) Connect oscilloscope to the FM OUT testpoint of the video playback circuit. Trigger the oscilloscope externally with the signal from the drum flipflop (D-FF or FF) testpoint. Set the trigger slope to minus (-). 2) Play the MH-1 Alignment tape and adjust the tracking for maximum FM waveform output. Refer to Fig. 1-6-1. Confirm the relationships indicated in the figure for maximum output (a), minimum center output (b), minimum output at the drum intake (c) and minimum output at the drum output (d). 3) Adjustment is required if the above specifications are not fulfilled. Even when these are fulfilled, check that the FM waveform varies linearly overall. If not, slight deviation in tracking will cause a large proportional level drop to result in noise appearing in the picture. Therefore, in this condition, proceed to the following checks and perform adjustments where necessary. 4) Operate the tracking adjustment between minimum and maximum outputs of the FM waveform. Observe the portion of the waveform corresponding to the drum intake (see Fig. 1-6-2). As the tracking is adjusted, although the gain may increase or decrease, the geometric shape of this part of the waveform should remain consistent. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the supply guide roller height. 5) Next observe the portion of the waveform corresponding to the drum output (see Fig. 1-6-3), while operating the tracking adjustment. This should also vary only in gain, but not in shape. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the take-up guide roller height. 6) Check the overall FM waveform. Fine-adjust both guide rollers so that variation is as minimum and linear as possible. 7) Observe the tape travel at the guide rollers and guide poles. Confirm absence of tape creasing or curling. Confirm that the tape properly rides at the lower flange of the supply guide pole. Carefully adjust the guide pole height if necessary. This adjustment is important and affects FM waveform response. If creasing or curling is observed at the take-up guide pole, carefully adjust the audio/control head inclination so that the tape rides properly at the lower flange of the guide pole. Finally, again check the FM waveform.

No.	Item	Adjustment parts	Operating mode	Description
	<p>Proper adjustment of the A/C head position is important for ensuring adequate audio output and S/N. Severe misalignment can prevent control signal pick-up and cause servo instability. Precise adjustment is particularly important for models that include tape indexing and addressing features, since these rely on control signal coding for operation. To observe the audio signal, connect an oscilloscope to the test point (AUDIO OUT) of the audio circuit, or directly to the audio output terminal. In some cases, monitoring the sound with headphones may be helpful.</p>			
2	A/C head adjustments	 <p>Fig. 1-6-4 A/C head</p>		<ol style="list-style-type: none"> 1) Play the stairstep (audio 7 kHz) portion of the MH-1 Alignment tape. 2) Adjust screw (3) (Fig. 1-6-4), which is the azimuth adjustment, for maximum output. 3) Turn screws (1), (2) and (3) by small and equal increments (about 45° at a time) to adjust the A/C head height for maximum audio output. Slightly raise and lower the height to confirm the maximum output position. 4) Observe the FM waveform and tighten the guide roller set-screws. Use care not to disturb the height adjustments. Then again confirm the FM waveform.
3	Control head phase (X value)	 <p>Fig. 1-6-5 Control head phase</p>		<ol style="list-style-type: none"> 1) Play the stairstep portion of the MH-1 Alignment tape. 2) See Fig. 1-6-5. Slightly loosen screws (4) and (5). Set the A/C head positioning tool over screw (4) with the pin of the tool inserted into the indicated hole. 3) Turn the tool counterclockwise to shift the A/C head fully toward the capstan direction. 4) While observing the CH-2 FM waveform, gradually turn the tool clockwise. Stop at the peak output position and tighten screw (5). Remove the tool and tighten screw (4). 5) Replace alignment tape MH-1L with MH-1, play back the stairstep segment of the alignment tape MH-1L. 6) Operate the tracking adjustment and confirm that the maximum FM waveform is obtained at the neutral setting. 7) If the FM output peak is not obtained at tracking neutral position, shift the A/C head at the FM output peak nearest to this position.

No.	Item	Adjustment parts	Operating mode	Description
4	Final checks			<p>1) Supply a video or TV signal (monochrome is preferable). Use a spare tape and record and play back. Confirm that the play-back FM signal conforms to the parameters indicated in Fig. 1-6-1. Check for both SP and EP modes.</p> <p>2) Connect the oscilloscope to the test point (FM OUT) of the FM audio play-back circuit. Play the staircase portion (which includes the FM audio carrier) of the MH-1L Alignment tape. Confirm absence of severe drop in FM waveform level.</p> <p>3) Perform the checks and, if necessary adjustments, of the Electrical Adjustments Section for the servo, video and audio (and FM audio) circuits.</p>

SECTION 2 ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.

It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio generator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: TV-channel
8. Signal generator:
 NTSC color bars, staircase, video sweeper or multi-burst, audio multiplex TV
9. Distortion meter
10. Recording tape
11. Alignment tapes: MH-1, MH-1L, MH-1H, MH-F1
12. Patch cord: PTU94001 (PRE/REC board to CONNECTOR board)

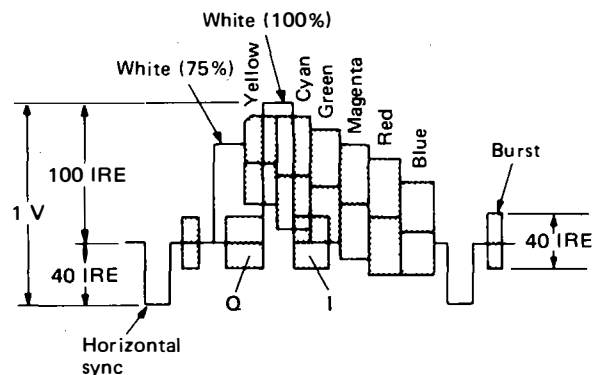


Fig. 2-1-1 Color bars signal waveform

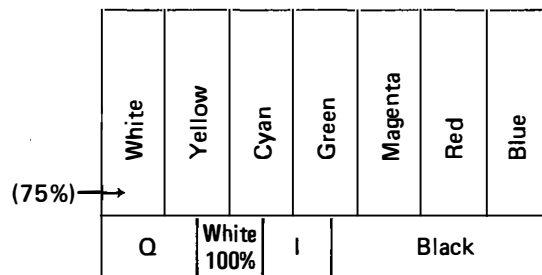


Fig. 2-1-2 Color bars pattern

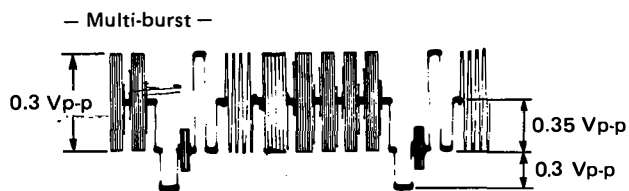


Fig. 2-1-3 Input signal level for multi-burst

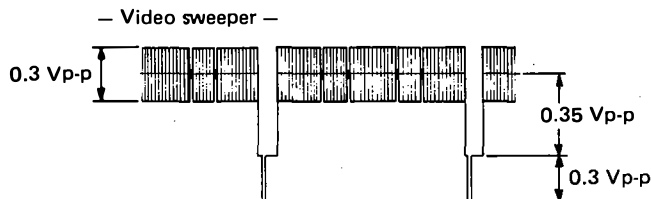


Fig. 2-1-4 Input signal level for video sweeper

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (—) indicates check only.
Signal & Mode	<ul style="list-style-type: none"> • Input signal required to perform adjustment. Dash (—) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-1 color bars	Color bars segment of MH-1 alignment tape.
MH-1 stairstep	Stairstep segment of MH-1 alignment tape.
MH-1 1 kHz	1 kHz audio signal segment of MH-1 alignment tape.
MH-1 RF sweep	RF sweep segment of MH-1 alignment tape.
MH-1L color bars	Color bars segment of MH-1L alignment tape.
MH-1L stairstep	Stairstep segment of MH-1L alignment tape.
MH-1L RF sweep	RF sweep segment of MH-1L alignment tape.
MH-1M color bars	Color bars segment of MH-1M alignment tape.
MH-1M stairstep	Stairstep segment of MH-1M alignment tape.
MH-1H color bars	Color bars segment of MH-1H alignment tape.
MH-F1 stairstep	Stairstep segment of MH-F1 alignment tape.
MH-F1 1 kHz	1 kHz FM audio signal segment of MH-F1 alignment tape.

E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
A DUB	Audio dubbing mode
SP mode	SP recording speed
EP mode	EP recording speed
LP mode	LP recording speed
S-VHS mode (S mode)	Super-VHS recording mode

Description This column provides an explanation of the step, notes and adjustment values.

2.1.3 Confirmation

Before adjustment, use the MENU button function to set the CLOCK and the STATUS.

The STATUS SET menu provides on screen display of the source, Band, AFC, REC speed, On-screen and 2nd Audio.

STATUS SET

SOURCE : TUNER → SIMUL → AUX
 BAND : TV → CATV
 AFC : NORM → SPCL
 REC : SP → EP
 ON-SCREEN: YES → NO
 2ND AUD : NO → YES

Selected by
 — SET + or —
 and SELECT

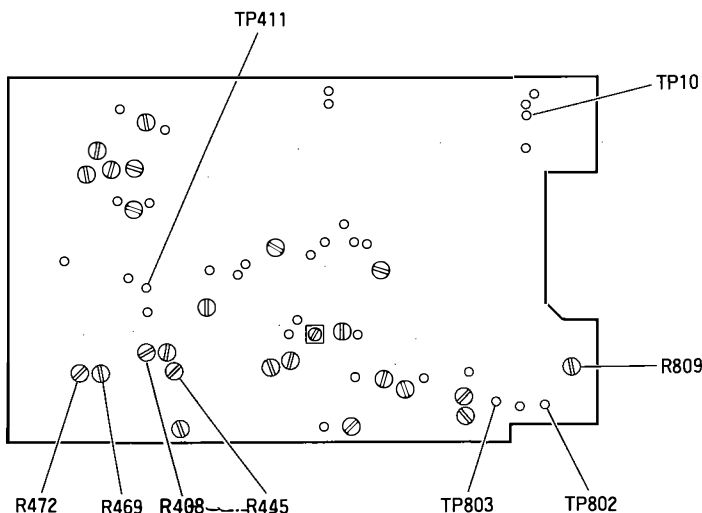
2.2 REGULATOR CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SWD 5V output voltage	TP802 (SWD 5 V) TP803 (GND)	R809 (+ 5 V ADJ)	• REC • SOURCE SEL: TUNER	1. Connect a digital voltmeter between TP802 and TP803. 2. Record in the TUNER mode, adjust R809 for 5.28 ± 0.05 V.

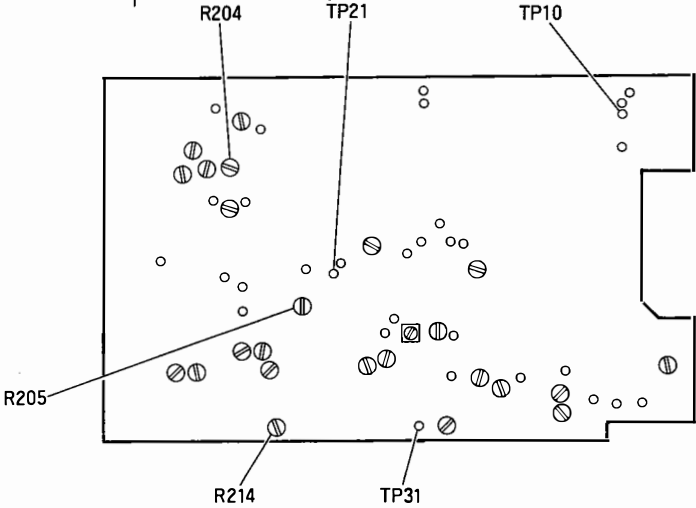
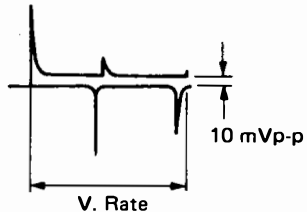
2.3 SERVO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the MAIN board.

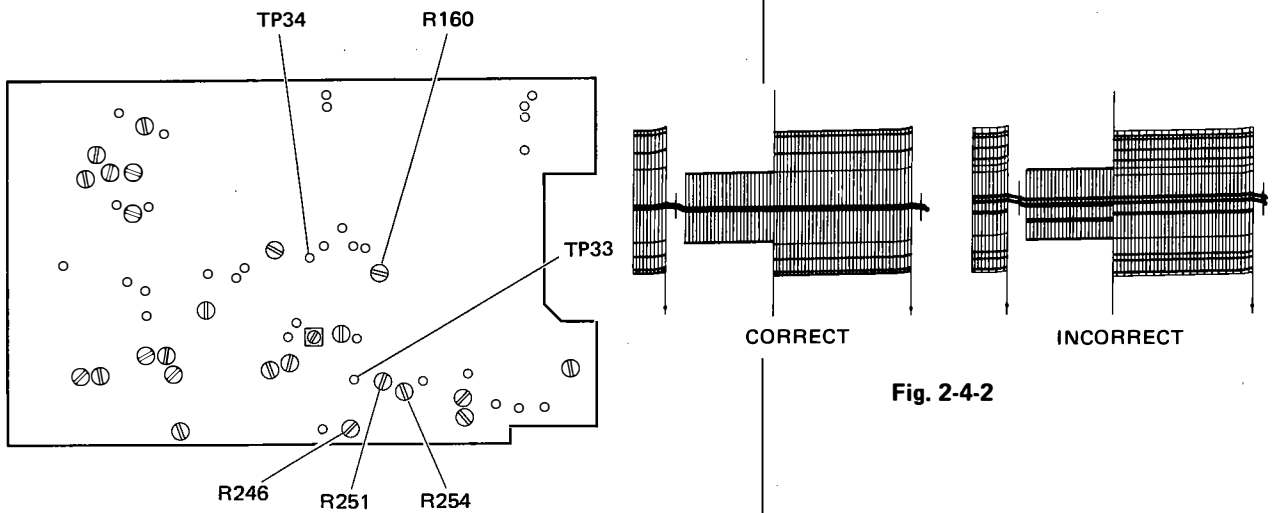
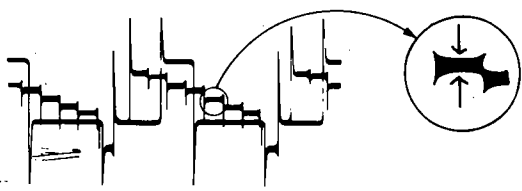
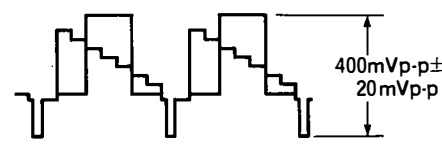
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SP PB Switching Point	VIDEO OUT or TP10	R445 (SP SW POINT)	• PB • MH-1 Stairstep • Trigger slope (—) • SP mode	<ol style="list-style-type: none"> 1. Connect an oscilloscope to VIDEO OUT or TP10 of the main board. 2. Play back the stairstep segment of MH-1 alignment tape. 3. Trigger the oscilloscope externally (— slope) with the signal from TP411 (DRUM FF). 4. Adjust R445 to position the trigger point 6.5 ± 0.5 H from V. sync.
 <p>The diagram shows the MAIN board layout with various test points and adjustment components labeled. TP411 is at the top left, TP10 is at the top right, R809 is on the right side, and R472, R469, R408, R445, TP803, and TP802 are at the bottom. A waveform diagram on the right shows a series of pulses with a horizontal distance of 6.5 ± 0.5 H from the V. sync line.</p>					
2	SP Slow Tracking Preset	Monitor	R472 (SP SLOW TK PRESET)	• Slow PB (1/6) • SP mode	<ol style="list-style-type: none"> 1. Set the tracking control of the FRONT to the pre-set position by simultaneously pressing the + and — tracking buttons. 2. Record a color bar signal in the SP mode, then play back in the Slow mode. 3. Adjust R472 to minimize noise bars in the monitor-TV display.
	EP Slow Tracking Preset	Monitor	R469 (EP SLOW TK PRESET)	• Slow PB (1/6) • EP mode	<ol style="list-style-type: none"> 4. In the same manner, adjust R469 for the EP mode.
3	EP 2X normal Tracking	Monitor	R408 (EP 2X NOR TK)	• 2X Play • EP mode • S-VHS mode	<ol style="list-style-type: none"> 1. Set the tracking control of the FRONT panel to the pre-set position by simultaneously pressing the + and — tracking buttons. 2. Record a color bar signal in the EP mode, then playback in the 2X play mode. Adjust R408 to minimize noise bars in the monitor-TV display.

2.4 VIDEO CIRCUIT

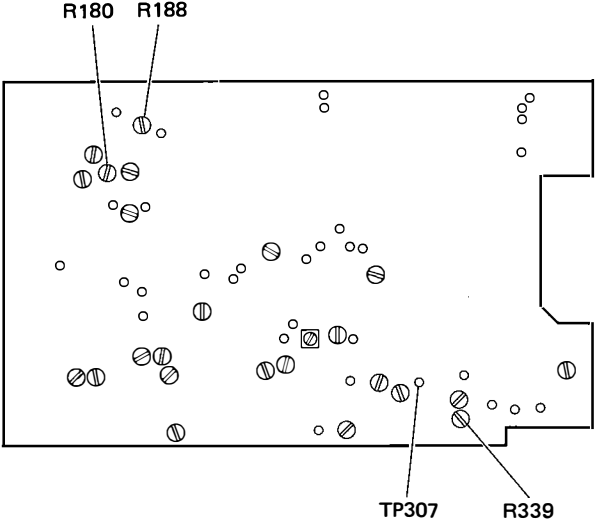
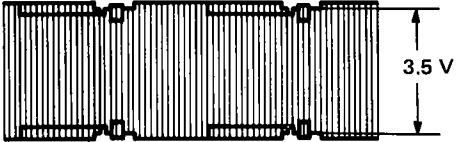
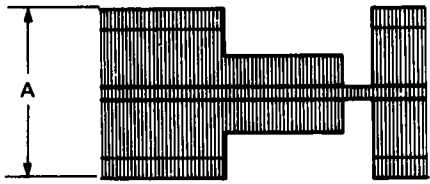
Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	E-E level	VIDEO OUT or TP10	R204 (E-E LEVEL)	<ul style="list-style-type: none"> • S-VHS mode • SP mode • E-E • Color bars 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to VIDEO OUT and supply a color bar signal to VIDEO IN. 2. Adjust R204 for 0.97 ± 0.03 Vp-p (75 Ω load).
					
2	CCD bias	TP31	R214 (CCD BIAS)	<ul style="list-style-type: none"> • S-VHS mode • SP mode • E-E • Color bars 	<p>Note: Confirm that the video signal level is 0.97 ± 0.03 Vp-p (75 Ω load) at VIDEO OUT. If necessary, perform the "E-E level" adjustment (Section 2.4.1) before this adjustment.</p> <ol style="list-style-type: none"> 1. Connect an oscilloscope to TP31 and supply a color bar signal to VIDEO IN. 2. Adjust R214 for maximum output level.
3	Y NR (NC BAL)	TP21	R205 (YNR NC BAL)	<ul style="list-style-type: none"> • S-VHS mode • EP mode • E-E • Color bars 	<ol style="list-style-type: none"> 1. Observe the TP21 waveform at V rate. 2. Adjust R205 for minimum DC step difference (less than 10 mVp-p).
					<p>Fig. 2-4-1</p>

Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
4	COL COMB	TP33	R246 (C COMB ADJ)	<ul style="list-style-type: none"> • S-VHS mode • SP mode • E-E • Color bars 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to TP33 and apply a color bar signal to VIDEO IN. 2. Adjust R246 so that the signal center-lines overlap each other (less than 50 mVp-p), in the SP mode.
 <p>Fig. 2-4-2</p>					
5	Y COMB1 and 2	TP34	R251 R254 (Y COMB ADJ)	<ul style="list-style-type: none"> • N mode • SP mode • E-E • Color bars 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to TP34 and supply a color bar signal to VIDEO IN. 2. Adjust R251 and R254 alternately for minimum chromatic level (less than 50 mVp-p of the magenta portion).
 <p>Fig. 2-4-3</p>					
6	PROCESSOR input level	TP39	R160 (PROCESS INPUT LEVEL)	<ul style="list-style-type: none"> • S-VHS mode • SP mode • E-E • Color bars 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to TP39 and apply a color bars signal to VIDEO IN. 2. Adjust R160 for 400 ± 20 mVp-p signal level, in the SP mode.
 <p>Fig. 2-4-4</p>					

Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
7	S mode REC FM level	TP3 (PRE/REC)	R180 (S-MODE REC FM)	<ul style="list-style-type: none"> • S-VHS mode • EP mode • REC • Color bars 	<p>Note: Connect an oscilloscope GND terminal to TP-GND near the shield case of the PRE/REC board.</p> <ol style="list-style-type: none"> 1. Connect an oscilloscope to TP3 of the PRE/REC board and record a color bars signal in the EP mode. 2. Adjust R180 for 3.5 ± 0.2 Vp-p pedestal level, between centers of the waveform outline at the pedestal portion.   <p>Fig. 2-4-5</p>
8	N mode REC FM level	TP3 (PRE/REC)	R188 (N-MODE REC FM)	<ul style="list-style-type: none"> • N mode • EP mode • REC • Color bars 	<ol style="list-style-type: none"> 1. In the same manner as above (Sec. 2.4.7), adjust R188 for 1.9 ± 0.1 Vp-p pedestal level.
9	SP REC Color Level and Balance	TP307	R339 (SP REC COLOR)	<ul style="list-style-type: none"> • S-VHS mode • PB mode • MH-1H color bars • SP mode • REC then PB • Color bars • SP mode 	<p>Note: Use larger-level waveform for adjustment.</p> <ol style="list-style-type: none"> 1. Connect an oscilloscope to TP307. Playback a color bar segment of the MH-1H and observe color signal level. 2. Adjust By pressing the + and - tracking buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3. Set the tracking control of the FRONT panel to the per-set position by simultaneously pressing the + and - tracking buttons. 4. Record and playback a color bar signal. If necessary, before recording, adjust R339 so that the higher level channel becomes 95 to 105% of the noted level "A" during playback. At this time, confirm that the channel difference is within 5 dB.  <p>Fig. 2-4-6</p>

Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
10	EP REC Color Level and Balance	TP307	R341 (EP REC COLOR)	<ul style="list-style-type: none"> •S-VHS mode •PB mode •MH-1H color bar •REC then PB •Color bar •EP mode 	<p>Note: Perform the EP mode adjustment after completing the SP mode.</p> <ol style="list-style-type: none"> 1. Connect an oscilloscope to TP307. Play back a color bar segment of the MH-1H and observe color signal level. 2. Adjust by pressing the + and – tracking buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3. Set the tracking control of the FRONT panel to the per-set position by simultaneously pressing the + and – tracking buttons. 4. Record and play back a color bar signal. If necessary, before recording, adjust R341 so that the higher level channel becomes 110 to 120% of the noted level "A" during playback. At this time, confirm that the channel difference is within 4 dB.
11	S mode PB Y level	VIDEO OUT or TP10	R157 (S-MODE PB Y LEVEL)	<ul style="list-style-type: none"> •S-VHS mode •SP mode •REC then PB •Color bars 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to VIDEO OUT. 2. Record a color bar signal in the SP mode, then play back. 3. Adjust R157 for 0.97 ± 0.03 Vp-p (75 Ω load).
12	N mode PB Y level	VIDEO OUT or TP10	R176 (N-MODE PB Y LEVEL)	<ul style="list-style-type: none"> •N mode •SP mode •REC then •Color bars 	<ol style="list-style-type: none"> 1. In the same manner as above (Sec. 2.4.11), adjust R176 for 0.97 ± 0.03 Vp-p (75 Ω load).
13	S mode. SP Frequency Response and Balance	TP110	R28 (S-SP FREQ RESPONSE)	<ul style="list-style-type: none"> •S-VHS mode •SP mode •REC then PB •Multi-burst or video sweeper 	<ol style="list-style-type: none"> 1. Terminate TP110 at 75 Ω load and set sharpness control to center-detent position. 2. Connect a signal generator to VIDEO IN and an oscilloscope to TP110. 3. Record in the SP mode, then play back and set 100 kHz level to 3-scale on the oscilloscope display at CH1 waveform. 4. Adjust R28 so that the 3.58 MHz level becomes 2.4 to 3-scale (-1 ± 1 dB). 5. Confirm that the level difference between both channels is less than 2 dB.

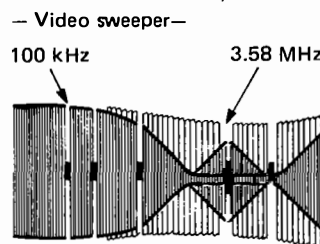
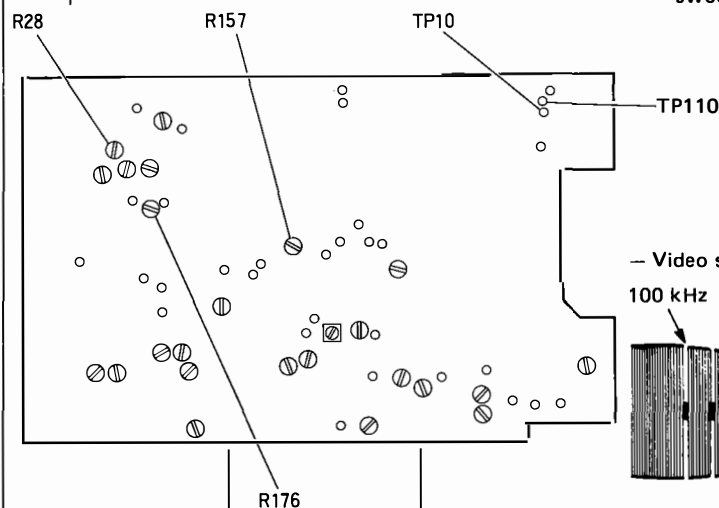


Fig. 2-4-7 (a)

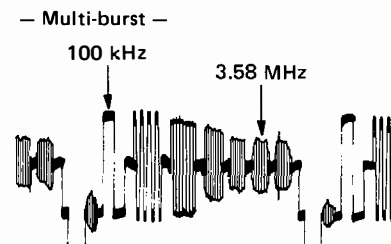
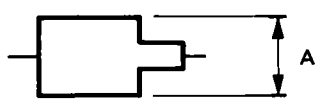
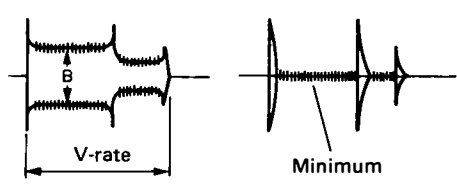
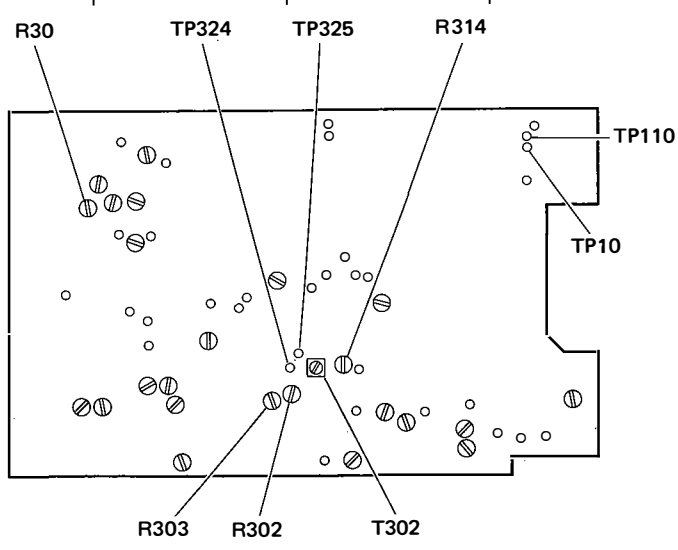
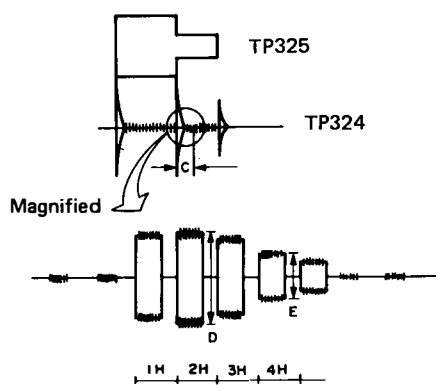


Fig. 2-4-7 (b)

Note: Unless otherwise noted, all test points and adjustments are located on the MAIN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
14	S mode EP Frequency Response and Balance	TP110	R30 (S-EP FREQ RESPONSE)	<ul style="list-style-type: none"> •S-VHS mode •EP mode •REC then PB •Multi-burst or video sweeper 	<ol style="list-style-type: none"> 1. In the same manner as above, (Sec. 2.4.13), perform adjustment for EP mode. 2. Record in the EP mode, then play back and set 100 kHz level to 3-scale on the display at CH1 waveform. 3. Adjust R30 so that the 3.58 MHz level becomes 1.8 to 2.4-scale (-3 ± 1 dB). 4. Confirm that the level difference between both channels is less than 2 dB.
15	C NR input level	TP325	R314 (C NR INPUT LEVEL)	<ul style="list-style-type: none"> •N mode •SP mode •REC then PB •Color bars 	<ol style="list-style-type: none"> 1. Observe the TP325 waveform at V rate. 2. Adjust R314 so that the color level (A) is 0.27 ± 0.01 Vp-p.  <p>Fig. 2-4-8</p>
16	C NR NC balance	TP324	R303 T302 (C NR NC BALANCE)	<ul style="list-style-type: none"> •N mode •SP mode •PB •MH-1 color bars •EDIT: OFF 	<ol style="list-style-type: none"> 1. Observe the TP324 waveform at V rate. 2. Adjust R303 and T302 to minimize the 3.58 MHz level "B", i.e., so that only the noise component is observable as shown in Fig. 2-4-9.  <p>Fig. 2-4-9</p>
17	C NR FB	TP324	R302 (C NR FB)	<ul style="list-style-type: none"> •N mode •PB •MH-1 color bars •EDIT: OFF 	<ol style="list-style-type: none"> 1. Short TP21 to TP GND2. Use the controls of the oscilloscope to expand portion C of the TP324 waveform as shown in Fig. 2-4-10. 2. Adjust R302 so that the maximum 3.58 MHz amplitude D and waveform segment E are related as follows $D : E = 2 : 1 \pm 0.1$ <p>Note: Read p-p value of D and noise center of E.</p>   <p>Fig. 2-4-10</p>

2.5 AUDIO CIRCUIT

Note: Unless otherwise specified, all test points and adjustments are located on the AUDIO board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio Bias Level	TP31, TP32 (GND)	R9 (BIAS ADJ)	<ul style="list-style-type: none"> • N mode • SP mode • No signal 	<ol style="list-style-type: none"> 1. Connect a millivoltmeter between TP31 and TP32. 2. Set for REC mode without signal. 3. Adjust R9 for 4.4 mVrms.
2	Audio PB Level	AUDIO OUT	R28 (PB LEVEL ADJ)	<ul style="list-style-type: none"> • REC • SP and EP mode 	<ol style="list-style-type: none"> 1. Connect an oscilloscope to AUDIO OUT. 2. Supply an audio signal (-8 dBs/1 kHz) to AUDIO IN and record together with a video signal, then play back. 3. Adjust R28 so that the audio output level during playback becomes -6 ± 1 dBs at SP mode (-6 ± 2 dBs at EP mode).
3	REC FM Level	TP53	R80 (FM REC ADJ)	<ul style="list-style-type: none"> • S-VHS mode • SP mode • REC then PB • No signal 	<ol style="list-style-type: none"> 1. Record in the SP mode, without an audio signal, then play back. 2. Adjust R80 for 70 mVp-p ± 5 mV FM audio play back voltage.
4	E-E Level	AUDIO OUT	R40 [E-E LEVEL (L)]	<ul style="list-style-type: none"> • ALC: OFF • REC mode • AUDIO OUT to Hi-Fi 	<ol style="list-style-type: none"> 1. Supply a 1 kHz, -8 dBs audio signal to AUDIO IN and a VIDEO signal to VIDEO IN. 2. Set Hi-Fi REC level controls to detent position. In the REC mode, adjust R40 to obtain -6 ± 0.5 dBs at AUDIO OUT.
			R41 [E-E LEVEL (R)]		<ol style="list-style-type: none"> 3. In the same manner, adjust R41 for the R (CH2) channel.
5	Level Indicator	FDP (Level Ind.)	R73 [LEVEL IND (L)]	<ul style="list-style-type: none"> • AUDIO OUT to Hi-Fi • E-E (Stop) mode • LEVEL INDICATOR SW: ON 	<p>Note: Perform the level indicator adjustment after completing the E-E level adjustment (section 2.5.4).</p> <ol style="list-style-type: none"> 1. Supply a 1 kHz, -8 dBs audio signal AUDIO IN. 2. Set Hi-Fi REC level controls to detent position. In the E-E (STOP) mode, adjust R73 to the point where the FDP level indicators show 0 dB.
			R74 [LEVEL IND (R)]		<ol style="list-style-type: none"> 3. In the same manner, adjust R74 for the R (CH2) channel.

2.6 ON SCREEN CIRCUIT

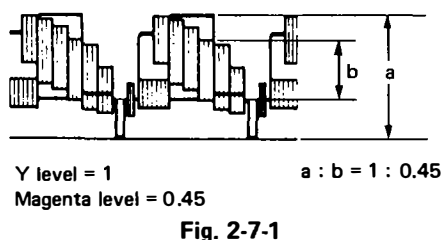
Note: Unless otherwise specified, all test points and adjustments are located on the ON SCREEN board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Character Position	TP2 (TDC)	C15 (CHARA POSI)	• E-E	<p>Note: For below adjustments use 1 : 1 probe with input capacitance less than 100 pF.</p> <ol style="list-style-type: none"> 1. Connect a frequency counter to TP2 (DTC) (mid point of R22 and R23) and GND. Short IC1-21 pin to GND and short IC1-5 pin to IC1-22 pin (SWD 5 V). 2. Adjust C15 for 8.7 ± 0.05 MHz without video signal.
2	Back ground Color	TP1 (TSC)	C18 (BACK COLOR)	• E-E	<ol style="list-style-type: none"> 1. Connect a frequency counter to TP1 (TSC) (mid-point of R24 and R25) and GND. Adjust C18 for 7.15909 ± 0.0001 MHz.

2.7 IF CIRCUIT

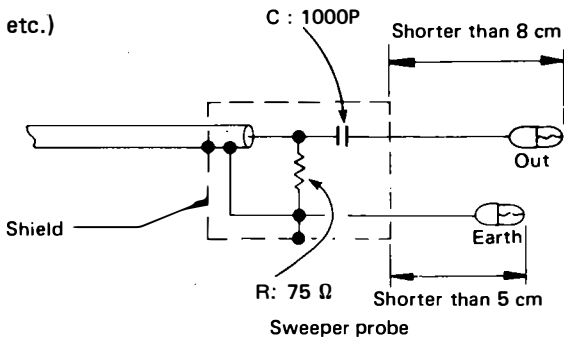
Note: Unless otherwise specified, all test points and adjustments are located on the IF board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	VCO	MONITOR	T2 (VCO)	• TV broadcast • Tuner mode	<ol style="list-style-type: none"> 1. Receive a color broadcast on a VHF-HI channel (7 to 10). 2. Adjust T2 to obtain a fine picture on the monitor.
2	AFC	JP1-5	T3 (AFC)	• TV broadcast • Tuner mode • AFC SW: NORM	<ol style="list-style-type: none"> 1. Receive a color broadcast on a VHF-HI channel (7 to 10). 2. With AFC SW to NORM, connect oscilloscope to pin 5 of JP1. 3. Set the oscilloscope to DC mode and adjust T3 to set the lower edge of the ripple waveform to 4.0 V.
3	Color Level	JP1-12	R40 (COLOR LEVEL)	• TV broadcast • Tuner mode	<ol style="list-style-type: none"> 1. Supply a color bar signal on a VHF-HI channel (7 to 10) from a TV channel signal generator and select the channel corresponding to the generator. 2. With AFC SW to NORM, adjust R40 to produce signal waveform as shown in Fig. 2-7-1. <p>Alternate method:</p> <ol style="list-style-type: none"> 1. Receive a color broadcast on a VHF-HI channel (7 to 10). 2. With AFC SW to NORM, adjust R40 so that the magenta level becomes 2/3% of the sync. level.
4	RF AGC	MONITOR	R21 (RF AGC)	• TV broadcast • Tuner mode	<p>Note: Adjust R21 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.</p> <ol style="list-style-type: none"> 1. Adjust R21 to minimize noise or streaks on the TV screen. 2. Check for absence of abnormality on all channels.



2.8 DEMODULATOR CIRCUIT

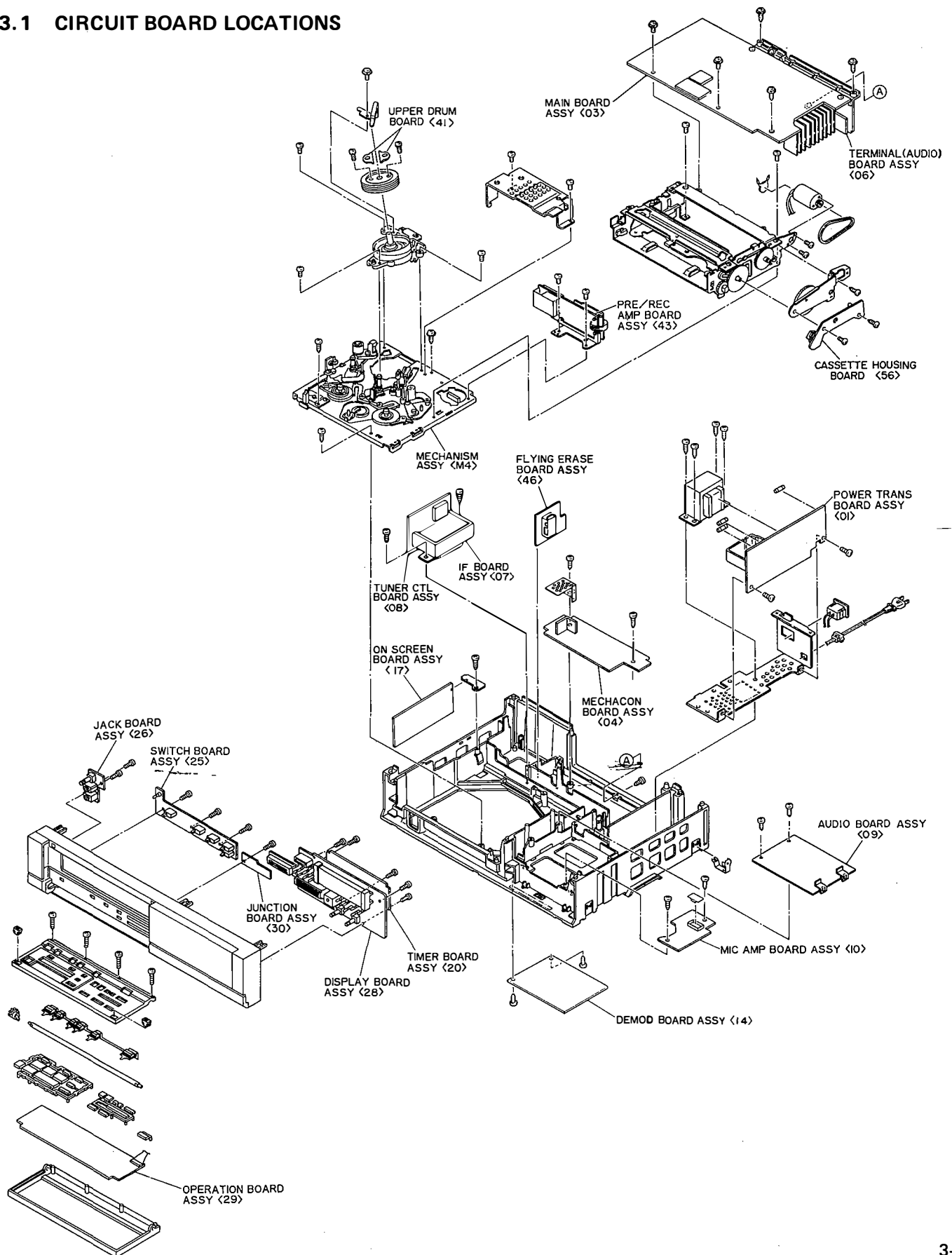
Note: 1. Unless otherwise specified, all test points and adjustments are located on the DEMODULATOR board.
 2. Unless otherwise specified, set an audio multiplex TV signal generator as follows;
 IF signal : 82 dB μ /75 Ω load, color bar 87.5% modulation.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
	Equipment required: 1. Oscilloscope 2. If sweep signal generator with suitable markers (PIF, SIF, etc.) 3. Sweeper probe (sweep signal supply) as shown below. <div style="text-align: right;">  <p style="text-align: center;">Fig. 2-8-1</p> </div>				
1	Stereo VCO	midpoint of R76 and R23	R23 (ST VCO ADJ)	<ul style="list-style-type: none"> • No signal • E-E mode 	1. Connect a frequency counter to midpoint of R76 and R23. (use low inductance (under 10PF) and high impedance (over 1 M Ω) probe.) 2. Adjust R23 for 62.936 kHz \pm 100 Hz.
2	Stereo filter	IC1-37 pin	R3 (ST FILTER ADJ)	<ul style="list-style-type: none"> • Tuner mode 	1. Supply an audio sinewave signal (78.67 kHz, 0 dBm) to CN2, 1 pin. 2. Connect a level meter to IC1, 37 pin and adjust R3 for minimum level (less than -40 dBm).
3	SAP filter	IC1-6 pin	R5 (SAP FILTER ADJ)	<ul style="list-style-type: none"> • Tuner mode 	1. Supply an audio sinewave signal (62.94 kHz, 0 dBm) to CN2, 1 pin. 2. Connect a level meter to IC1, 6 pin and adjust R5 for minimum level (less than -35 dBm).
4	dBX level mutch [(L-R) & SAP]	IC1-24	R26 (L-R LEVEL) R18 (SAP LEVEL)	<ul style="list-style-type: none"> • Tuner mode 	1. Use a sweep probe as shown in Fig. 2-8-1 and apply IF signal to SAW 1. 2. Set a signal generator mode to stereo (L-R) 300 Hz 14% and connect a level meter to IC1, 24 pin and GND (\ominus terminal of C9). 3. Adjust R26 for 60 \pm 3 mVrms. 4. Set a signal generator mode to SAP 300 Hz 14% and connect a level meter to IC1, 24 pin and GND (\ominus terminal of C9). 5. Adjust R18 for 60 \pm 3 mVrms.
5	OUTPUT LEVEL [(L + R) & SAP]	CN1-4 pin CN1-7 pin	R22 (L + R LEVEL) R55 (SAP LEVEL)	<ul style="list-style-type: none"> • Tuner mode 	1. Set a signal generator mode to stereo (L + R) 1 kHz 100%, connect a level meter to CN1, 4 pin. Adjust R22 for -17 \pm 0.5 dBm. 2. Set a signal generator mode to SAP 1 kHz 100%, connect a level meter to CN1, 7 pin. Adjust R55 for -17 \pm 0.5 dBm.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
6	Separation and Spectrum	CN1-2 pin	R19 (SEPA- RATION) R36 (SPECTRUM)	• Tuner mode	<ol style="list-style-type: none"> 1. Set a signal generator mode to alternate (R) 300 Hz 14% and 5 kHz 14%, and (L) unmodulated. 2. Connect a level meter to CN1, 2 pin. 3. Adjust R19 for minimum level (less than -60 dBm) at 300 Hz. 4. Adjust R36 for minimum level (less than -60 dBm) at 5 kHz. 5. Readjust R19 at 300 Hz and R36 at 5 kHz for minimum leakage levels repeatedly.
7	Sub Buzz	CN1-2 pin or CN1-4 pin	T8 (IF board)	• Tuner mode	<ol style="list-style-type: none"> 1. Set a signal generator to stereo (L-R) 1 kHz 100%, connect a distortion meter to CN1, 2 pin or CN1, 4 pin. 2. Adjust T8 on IF board assembly for minimum distortion (less than 3%).

SECTION 3 CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD LOCATIONS



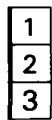
3.2 GENERAL INFORMATION

3.2.1 Connections

Note:

Unless otherwise specified, only signal input flow is indicated.

Connection arrows indicate only signal outputs.



: Connector



: Direct connection



: Board in connector



: Connected pattern in the board.



Abbreviations R : Regulator



V : Video M : Mechacon

S : Servo A : Audio

VS : Signal flow from video to servo.

3.2.2 Indications

AUX : Active only at high.

$\overline{\text{AUX}}$: Active only at low.

$\overline{\text{AUX}}$: Active only at middle.

$\overline{\text{AUX}}$: Active only at open.



: Active only at low for electronic switch.



: Active only at high for electronic switch.



: Low pass filter.



: High pass filter.



: Band pass filter.



: Limiter.



: Detector

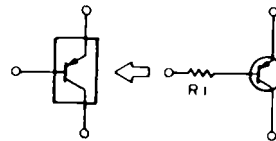
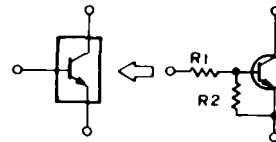


: Amplifier.



: Mixer stage.

3.2.3 Digital transistor



DTA114T
T mark only

Note:

The digital transistor includes built in resistors.

It features small size and high reliability.

Both PNP and NPN types are available.

Uses:

Inverter, Interface, driver circuits.

3.2.4 Signal flow in the schematic



Recording signal path



Playback signal path



REC/PB signal path

3.2.5 Schematic diagram values

Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W, 1/8 W, (refer to parts list).
2. All capacitance values are in μF , (P; PF).
3. All inductance values are in μH , (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parentheses.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (-8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded () parts are critical for safety. Replace only with specified parts numbers.

3.3 ABBREVIATIONS USED IN THE SCHEMATIC DIAGRAMS

A AC : Alternating Current ACC : Automatic Color Control ACCEL : Acceleration A/CTL : Audio/Control ADC : Analog to Digital Converter ADD : Adder ADRS : Address ADJ : Adjustment A DUB : Audio Dubbing AE : Audio Erase AEF : Automatic Editing Function AFC : Automatic Frequency Control AFT : Automatic Fine Tuning AGC : Automatic Gain Control AH : Audio Head AL : After Loading ALC : Automatic Light Compensation Automatic Level Control AM : Amplitude Modulation AMP : Amplifier ANT : Antenna APC : Automatic Pedestal Control Automatic Phase Control APL : Average Picture Level A/S/M : Audio/Servo/Mechacon ASS'Y : Assembly ATT : Attenuator AUD : Audio AUTO : Automatic AUX : Auxiliary	D D : Drum, Digital, Diode, Drain DAC : Digital to Analog Converter dB : Decibel DC : Direct Current DEC : Decoder DEMOD : Demodulator DEMUX : Demultiplexer DET : Detector DEV : Deviation DIF : Differential DISCR : Discriminator DL : Delay Line DOC : Dropout Compensator DOD : Drop Out Detector DPC : Drum Phase Control
B B : Base BAL : Balance BATT : Battery BFP : Burst Flag Pulse BIT : Binary Digit BLK : Black, Blanking BLU : Blue BILING : Bilingual BPF : Bandpass Filter BRK : Brake BRN : Brown BT : Band Tuning BUFF : Buffer BW or B/W : Black and White	E E : Edit, Emitter E-E : Electric to Electric EF : Emitter-Follower EMP : Emphasis EN : Enable ENC : Encoder ENV : Envelope EP : Extended Play EQ : Equalizer ES : Electronic Switch ESNS : End Sensor EXP : Expander EXT : External
C C : Capacitance, Collector, Color CAP : Capstan, Capacitor CAR : Carrier CARR : Carrier CASS : Cassette CCD : Charge Coupled Device CCT : Circuit CD : Count Down CE : Chip Enable CF : Ceramic Filter CH : Channel CHG : Charge CHROMA : Chrominance CLK : Clock CLR : Clear CMD : Command CNT : Count, Counter COL : Color COM : Common COMB : Combination Comb Filter COMP : Comparator Composite Compensation CONN : Connector CONV : Converter CP : Circuit Protector Clamp Pulse CPC : Capstan Phase Control CTL : Control	F F : Farad, Fuse F ADV : Frame Advance FDP : Fluorescent Display Panel FE : Full Erase FET : Field Effect Transistor FF : Fast Forward Flipflop FG : Frequency Generator FM : Frequency Modulation FMA : FM Audio FR : Full Recording, Frame, Fusible Resistor FREQ : Frequency F-V CONV : Frequency to Voltage Converter FWD : Forward FWD S : Forward Search
G G : Green, Gate, Grid GEN : Generator GND : Ground GRN : Green GRY : Gray	H H : High, Henry, Hour HG : Hall Generator HPF : Highpass Filter Hz : Herz
I IC : Integrated Circuit ID : Identification (Pulse) IF : Intermediate Frequency IFR : Infrared IFT : Intermediate Frequency Transformer IND : Indicator INH : Inhibit INS : Insert INT : Internal, Interrupt INV : Inverter I/O : Input/Output IR : Infrared	L L : Low, Left LIM : Limiter LIN : Linearity LOAD : Loading (Cassette) LP : Long Play LPF : Lowpass Filter

M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MI	: Multiintroduce
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select

N	NAND	: Not-And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction

O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORN	: Orange
	OSC	: Oscillator

P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	POS	: Position
	p-p	: Peak-to-Peak
	PREAMP	: Preamplifier
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWM	: Pulse Width Modulation
	PWR	: Power

Q	Q	: Quality Factor
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R	R	: Red, Right
	RA	: Resistor Array
	RAE	: Random Access Enable
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	R/P	: Record/Playback
	RPT	: Repeat
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay

S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency

SHARP	: Sharpness
SN	: Signal to Noise Ratio
SOL	: Solenoid
SP	: Standard Play
SREV	: Search Reverse
SREW	: Short Rewind
S/S	: Slow/Still
SSG	: Sync Signal Generator
SSNS	: Start Sensor
STD	: Strobe Data, Standard
SUP	: Supply
SW	: Switch
SWD	: Switched
SYNC	: Synchronization

T	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up

U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched

V	V	: Vertical, Volt
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	V/T	: Video/Television
	V/U	: VHF/UHF
	VXO	: Variable Crystal Oscillator

W	W	: Watt
	W & D	: White and Dark
	WHT	: White

X	XTAL	: Crystal
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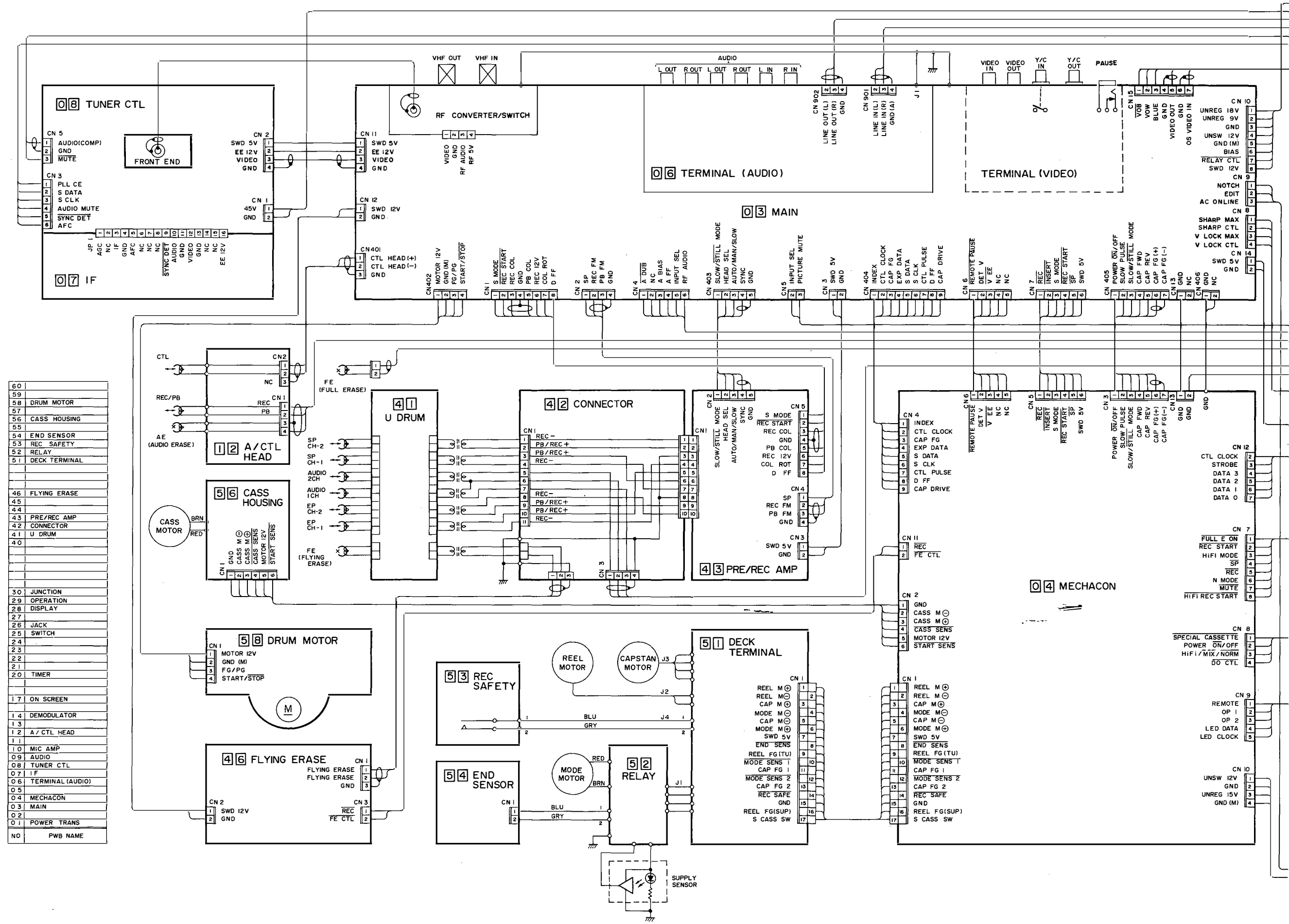
Y	Y	: Luminance
	YEL	: Yellow

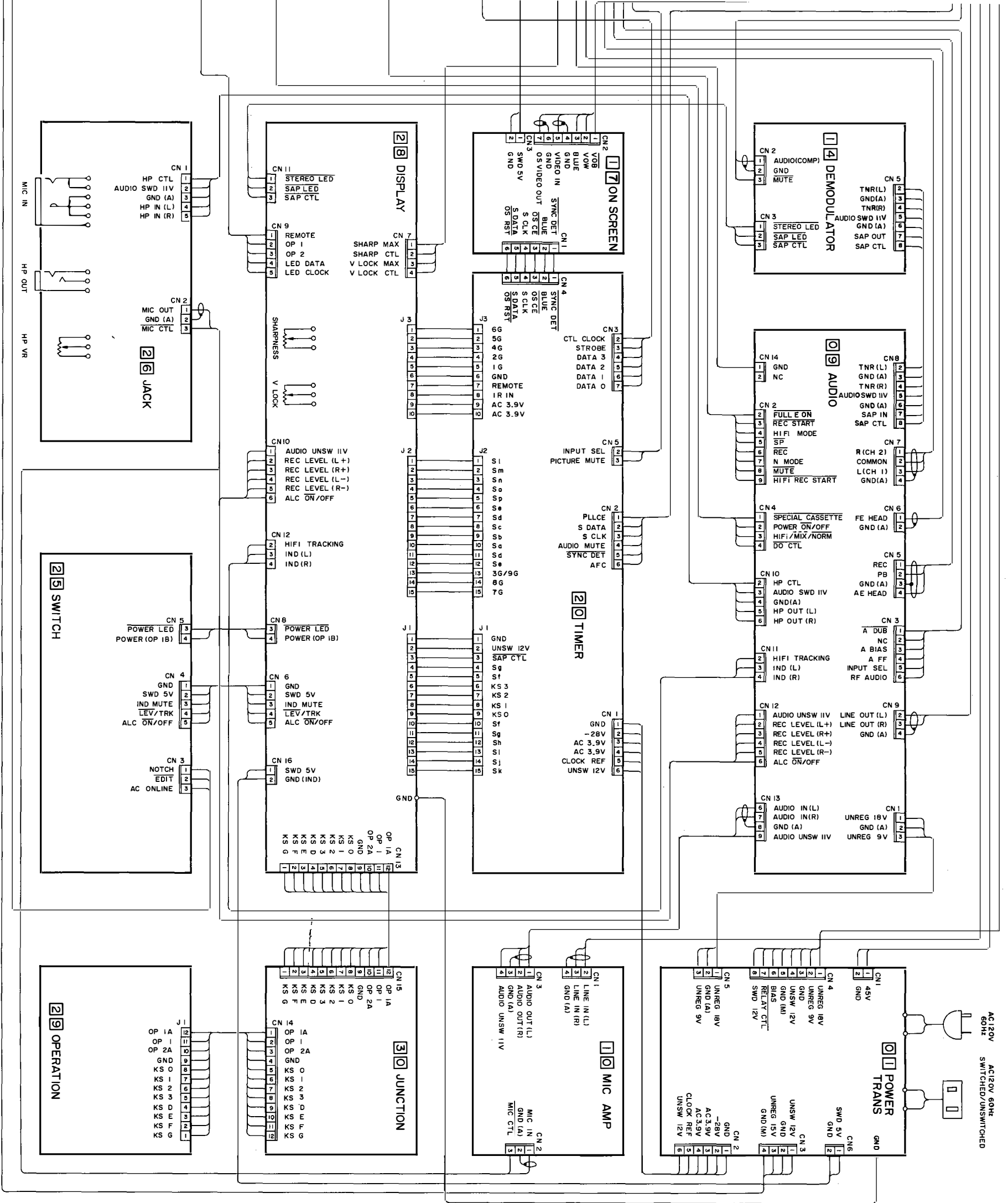
3.4 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS

	Integrated Circuit		Transistor		Diode
	A	B	C	D	E
1					
2					
3					
4					
5					
6					
7					
8					

NAME			L	NAME			L	NAME			L
IC				DIODE							
A	AN3211NK AN3380NK AN3926K AN6392	1B 1B 1B 5A		T	TA7361AP TC74HC4053AF TD6358P TD62003F	5A 9B 1B 8B		A	AU01Z		3E
B	BA6222 BA6259N BA7001 BA7021 BA7057 BA7233 BU2767S BU2768N BU4013B BU4030B BU4030BF	9A 6A 4B 4B 2A 2A 2A 6A 2A 2A 8B		V	VC2034 VC2034-2	8A 8A		D	DA210S DAN202K DAP209S		3E 3E
C	CXA1126S	1A		TRANSISTOR				F	F5KQ40B F6P20F FMB-24 FML-12S		5E .5E 5E 5E
H	HA118019NT HD49712ANT	2B 1A		DTA	DTA114ES DTA114TS DTA124EK DTA124ES DTA144EF DTA144ES	4C 3D 1C 4C 2C 4C		G	GL-3EG43		1E
I	IC-PST523H-2	7B		DTB	DTB114ES	4D		H	HZ2BLL HZ6A3 HZ30-2L HZS4.3EB2 HZS33EB1 HSS101-01		4E 4E 4E 4E 4E 3E
L	LA7220	1B		DTC	DTC114ES DTC124ES DTC143ES DTC143TS DTC144EF DTC144EK DTC144ES DTC144WS	4C 4C 4C 3D 2C 1C 4C 4C		L	LTZ-MR15		2E
M	M5M4C500L M5218P M5278L56 M50255P M50601P M50747E-897FP M50938-600 M51271FP M51272FP M51279FP M51365SP M51647SP M52678FP M52679FP M54647L M65011FP MB89010A-108 MN1220 MN3106 MN3801 MSC1146RS MSC7112-01SS	5B 3A 7B 2A 2A 7A 2B 8B 8B 8B 1B 1B 8B 8B 6B 7A 2A 1B 3A 1B 2A 1A		DTD	DTD114ES	3D		M	MA27W(B) MA165 MTZ4.3A MTZ6.8B MTZ7.5C MTZ8.2A MTZ10A MTZ10B MTZ13C MTZ20C		3E 3E 4E 4E 4E 4E 4E 4E 4E
N	NJM2217L NJM2220S	2A 5B		U	UN4112 UN4212	2C 4C		O	OA90		3E
P	PB20166D PB20167B-02 PB20187A PU22517D	3B 3B 4A 3B		2SA	2SA720 2SA854S 2SA933S 2SA1037K 2SA1309 2SA1309S 2SA1346	5C 4C 4C 1C 4C 4C 4C		R	RD6.2ES-T1B2 RD8.2ESB2 RD9.1ES-T1B2 RU1A		4E 4E 4E 3E
U	UPC78N05 UPC319C UPC393C UPC7805H UPD74HC00G UPD75P108CN-018 UPD4053BC UPD75108CW-099 UPD75216ACW-058	1B 3A 8B 1B 1B 1B 1B		2SB	2SB911 2SB1068 2SB1186	3C 4D 2D		S	SLH-34VC3F SLR-34MC3F SLR-34VC3F SLV-31MC3F		1E 1E 1E 1E
				2SC	2SC536SPA 2SC1317S 2SC1740S 2SC1741S 2SC2021 2SC2412K 2SC3311 2SC3354 2SC3399 2SC3400	4C 5C 4C 4C 2C 1C 4C 2C 4C 4C		U	UZ8.2BSC		4E
				2SD	2SD636 2SD1423 2SD1450 2SD1468S 2SD1764 2SD1796	2C 4C 4C 4C 2D 2D		1	10E4 11E2 1SS99 1SS101 1SS132 1SS133		3E 3E 3E 3E 3E 3E
								E	E-452-2		

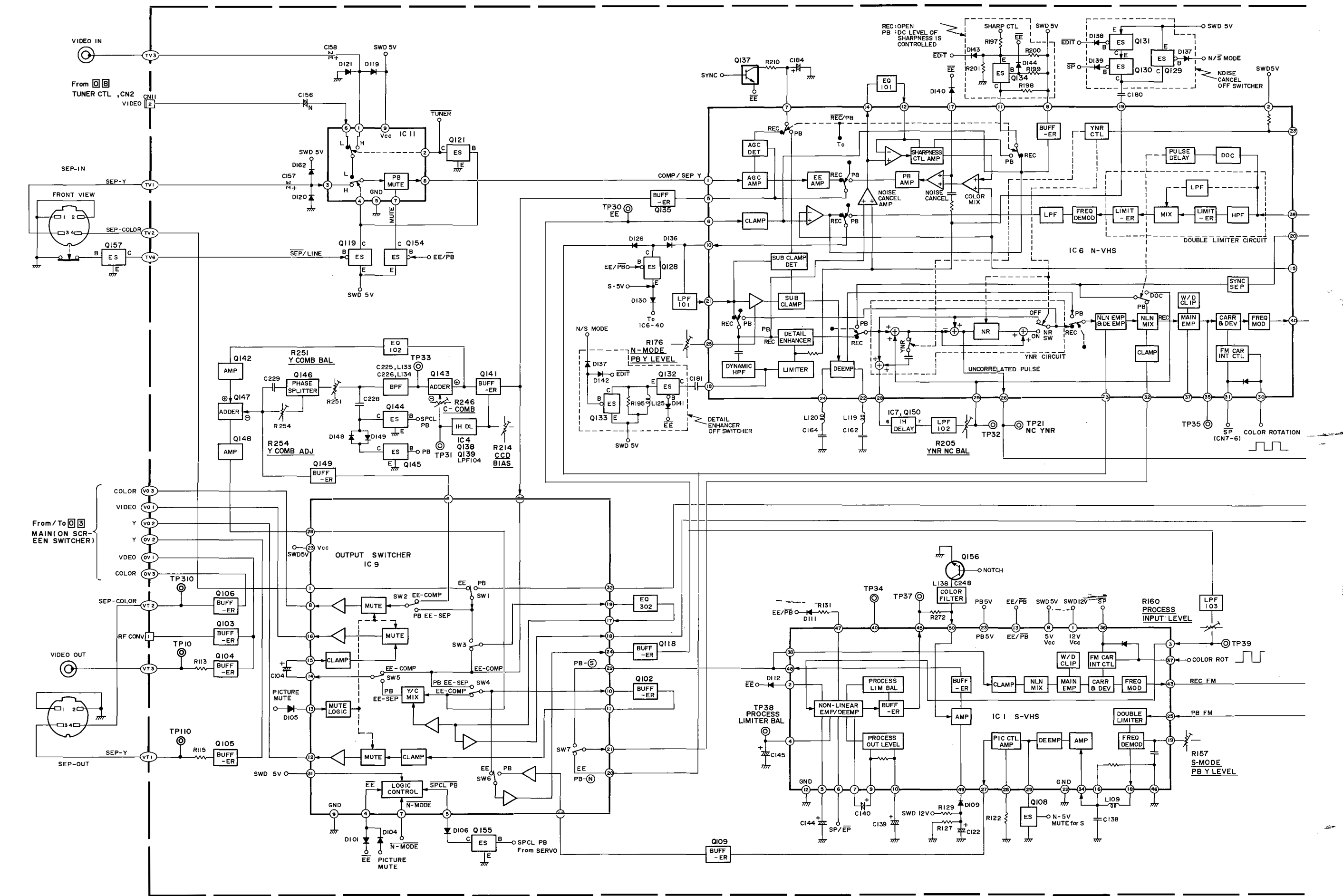
3.5 BOARD INTERCONNECTIONS

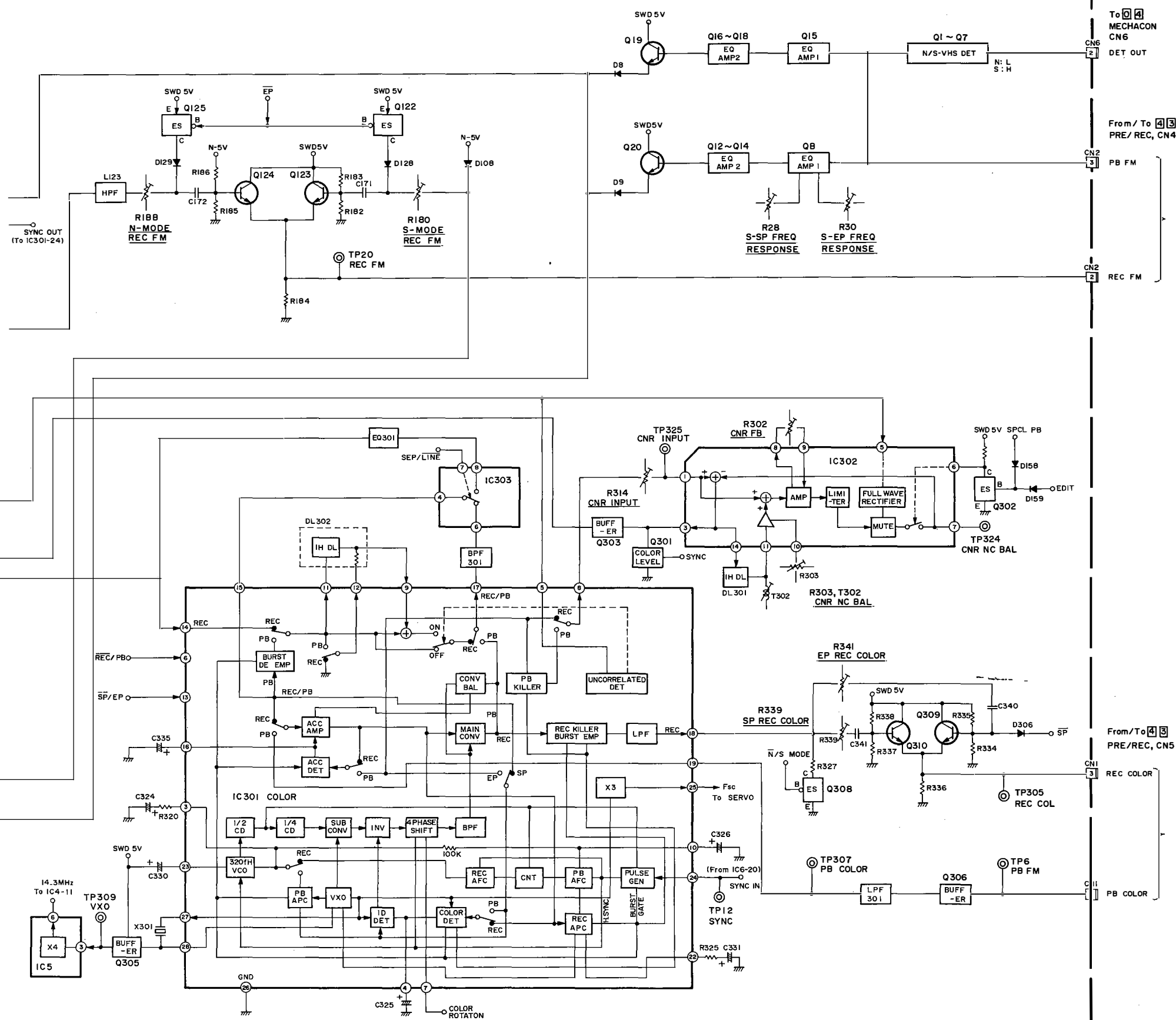




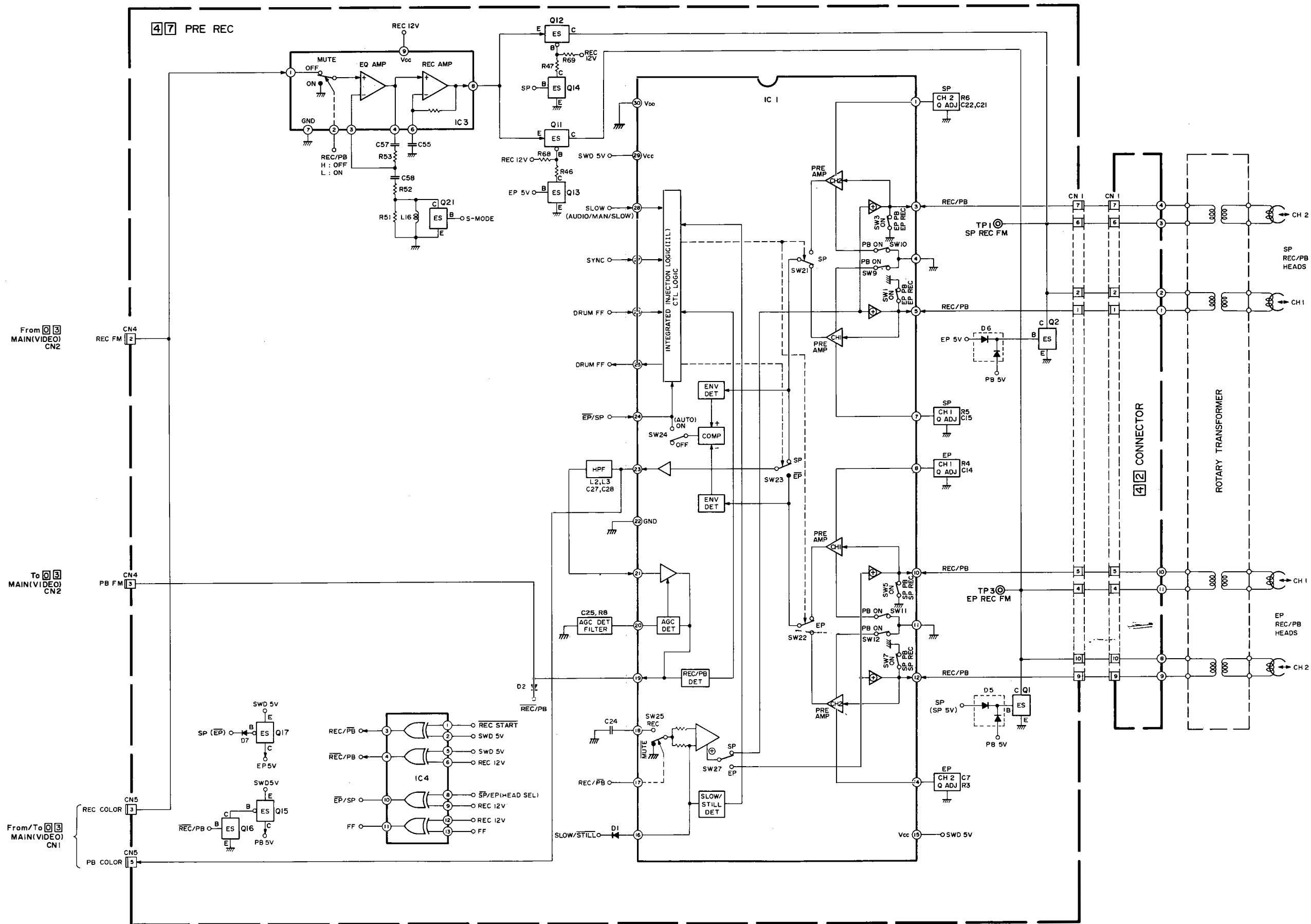
J K L 3-7 3-7 N O P

3.6 VIDEO BLOCK DIAGRAM





3.7 PRE/REC BLOCK DIAGRAM



A

B

C

3-10 D

3-10

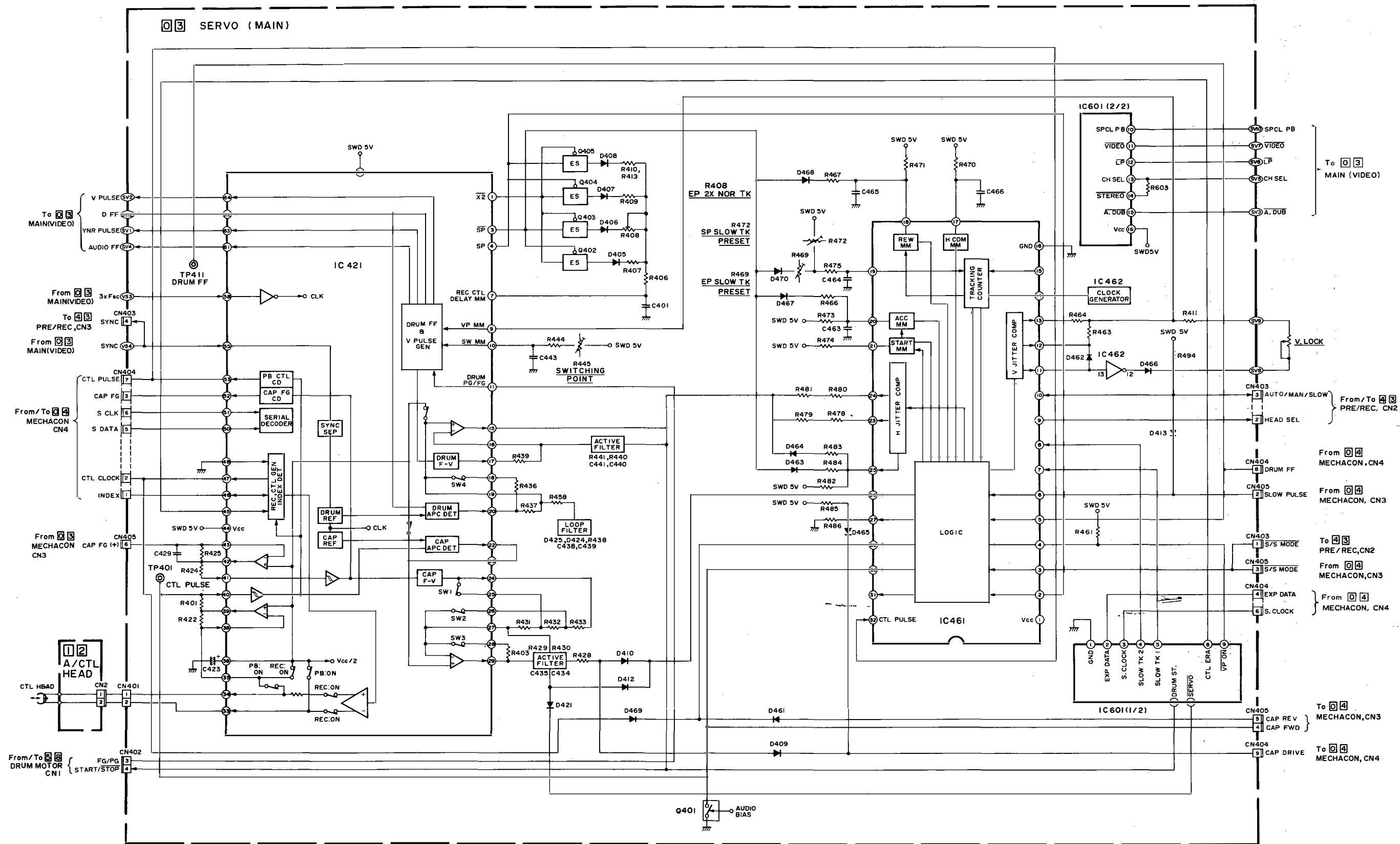
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F

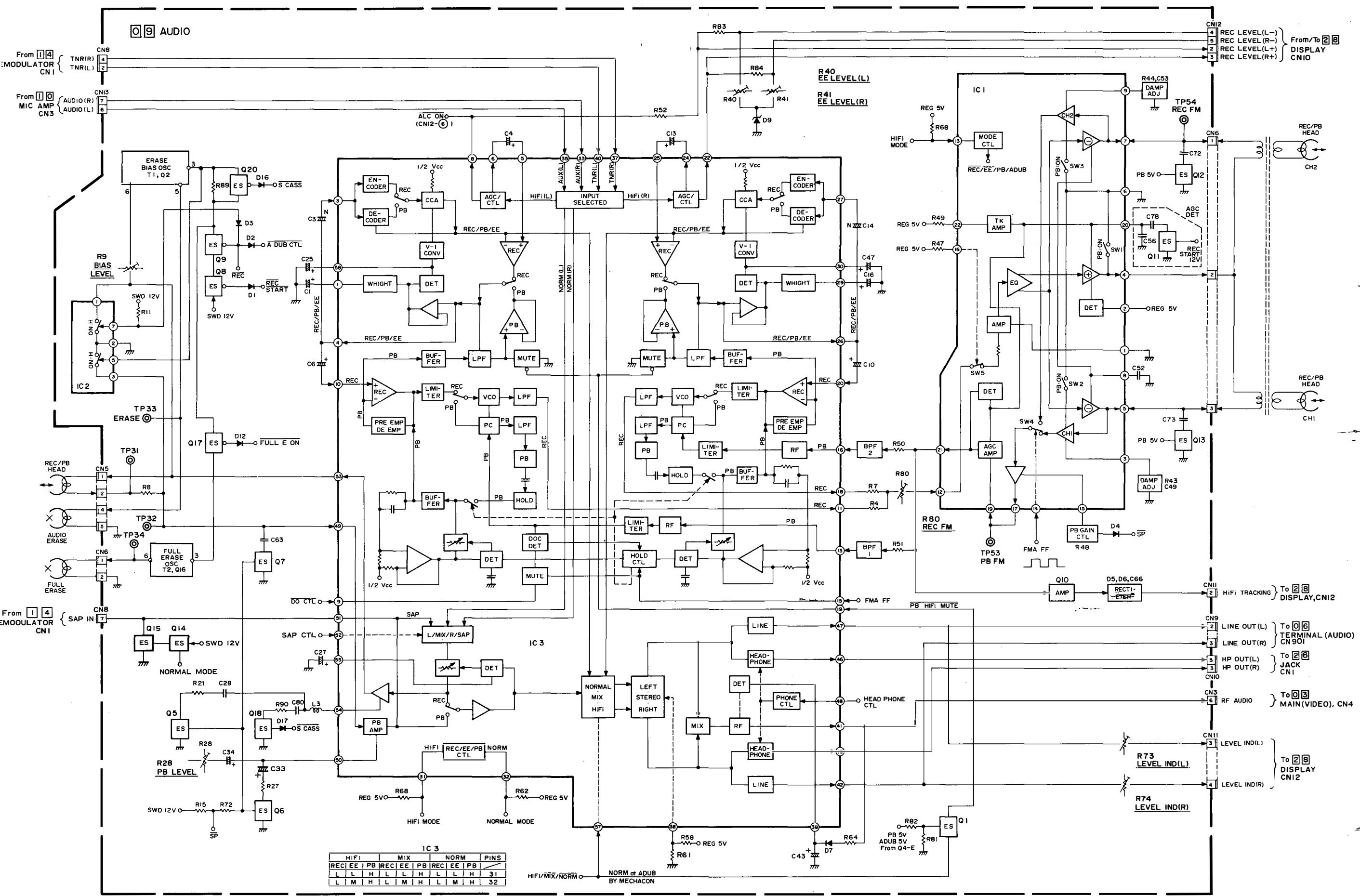
G

H

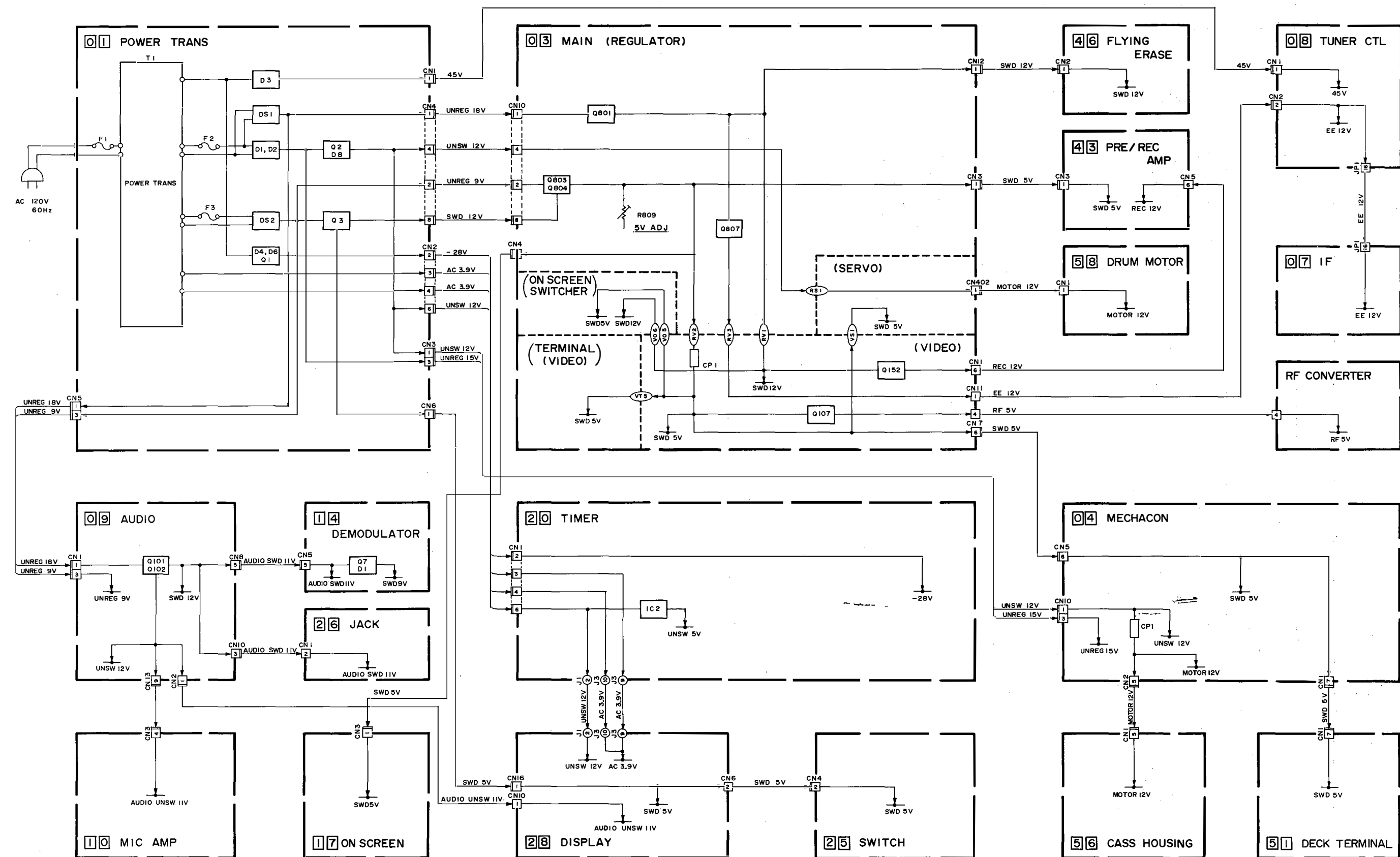
3.8 SERVO BLOCK DIAGRAM



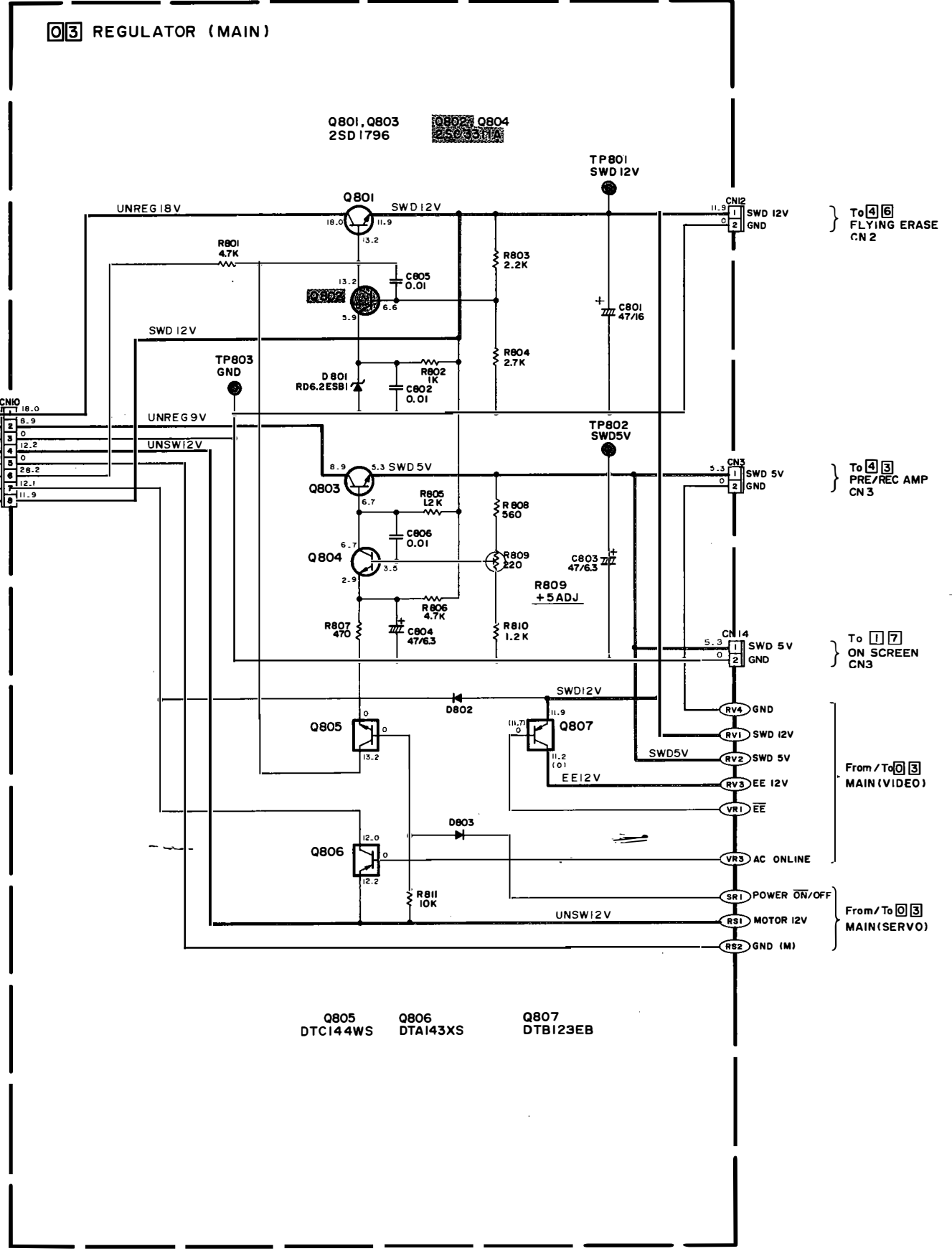
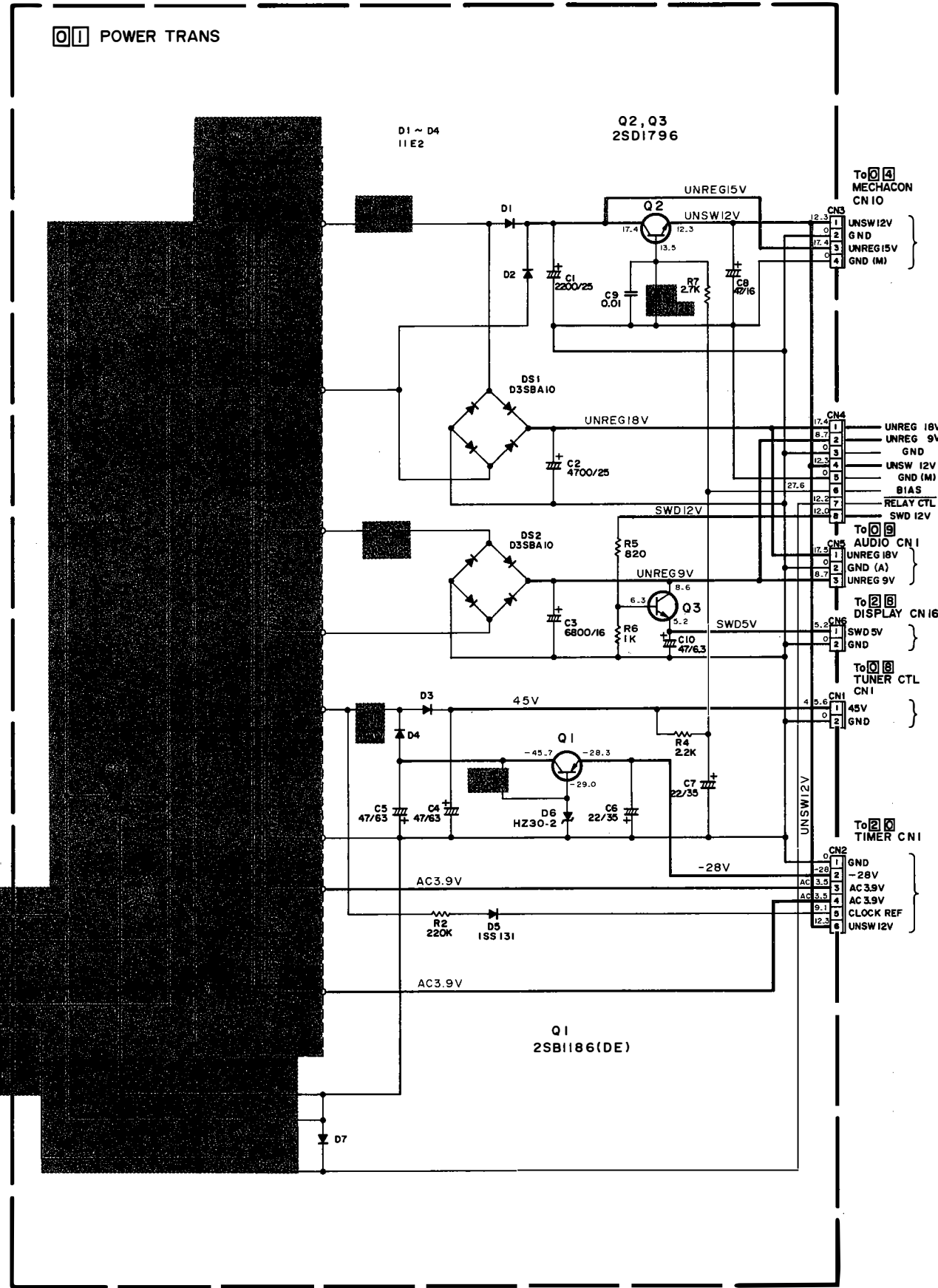
3.9 AUDIO BLOCK DIAGRAM



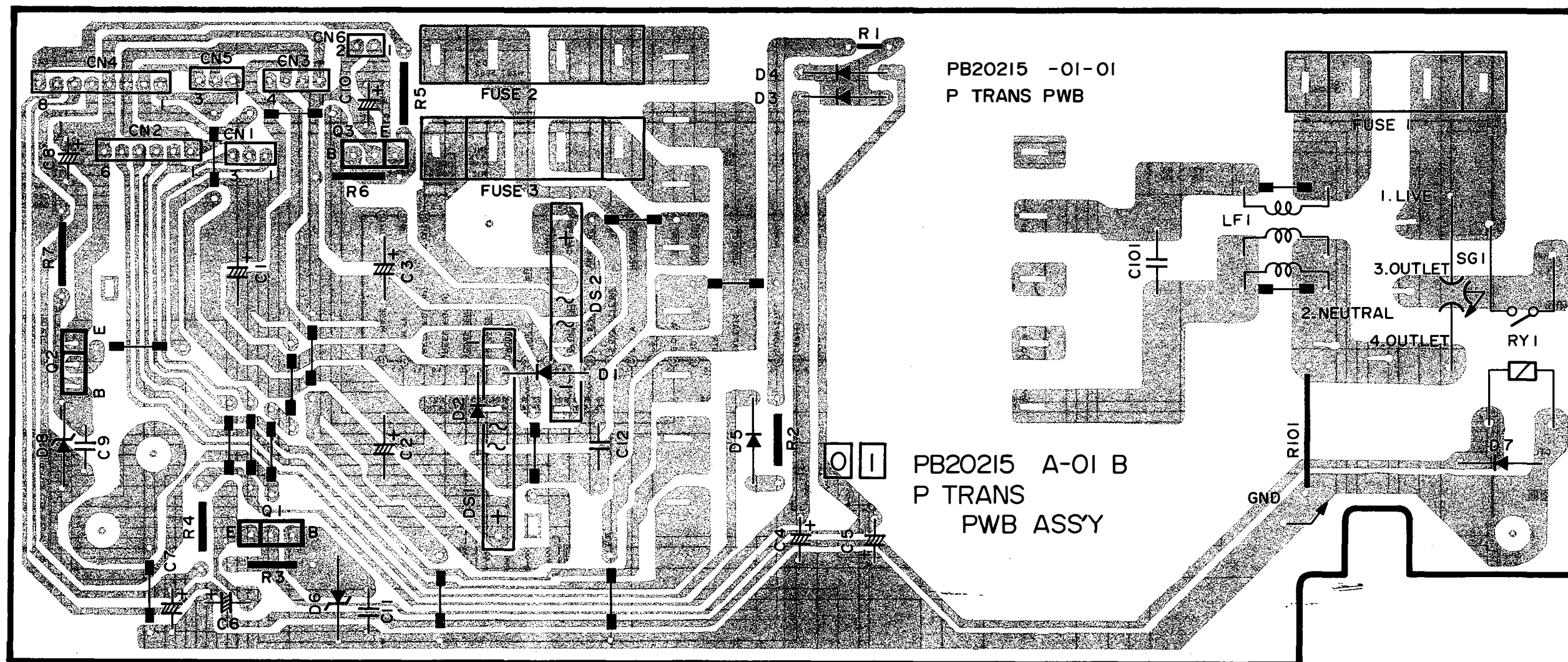
3.10 POWER SYSTEM BLOCK DIAGRAM



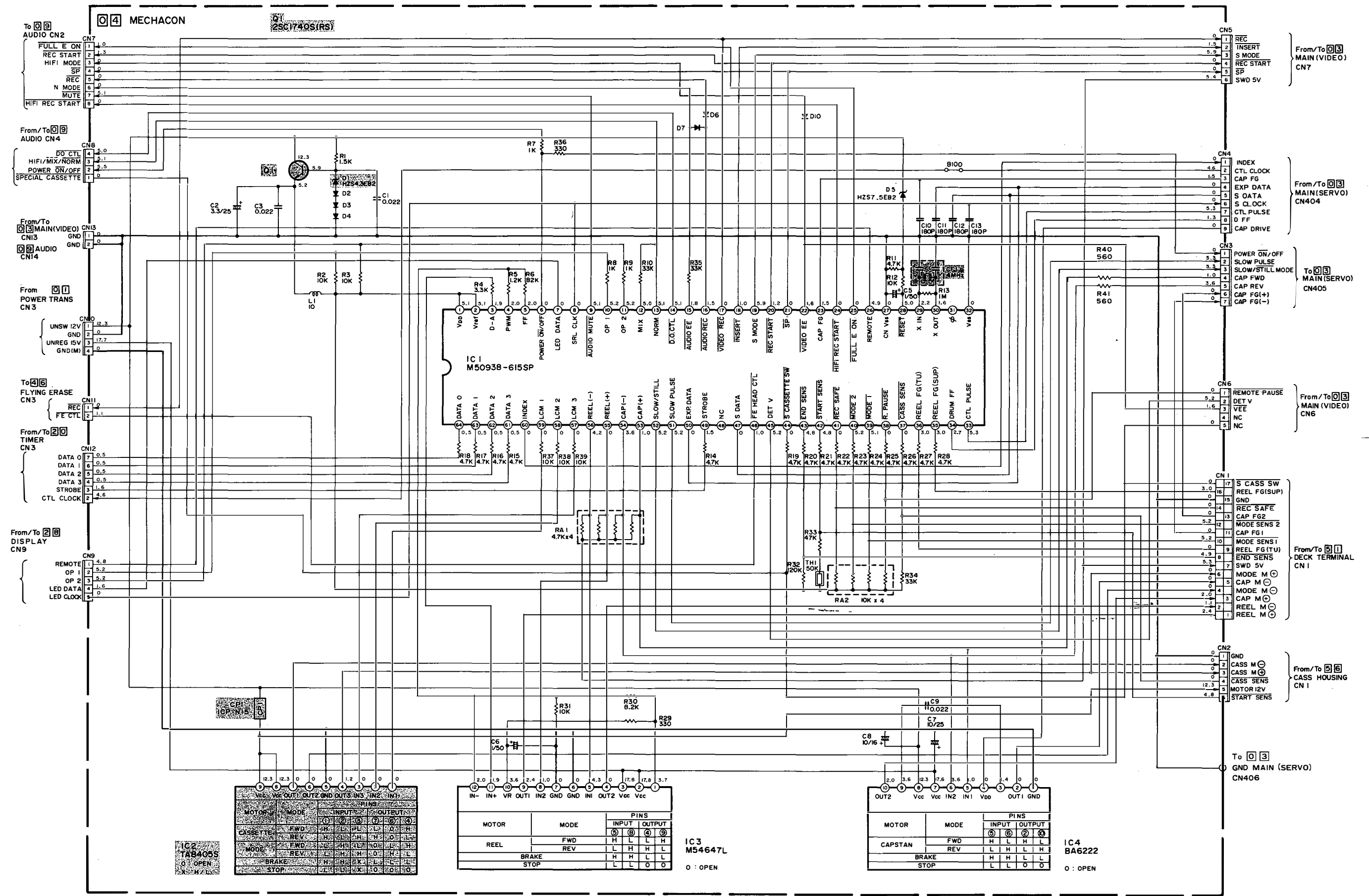
3.11 POWER TRANSFORMER AND REGULATOR SCHEMATIC DIAGRAMS



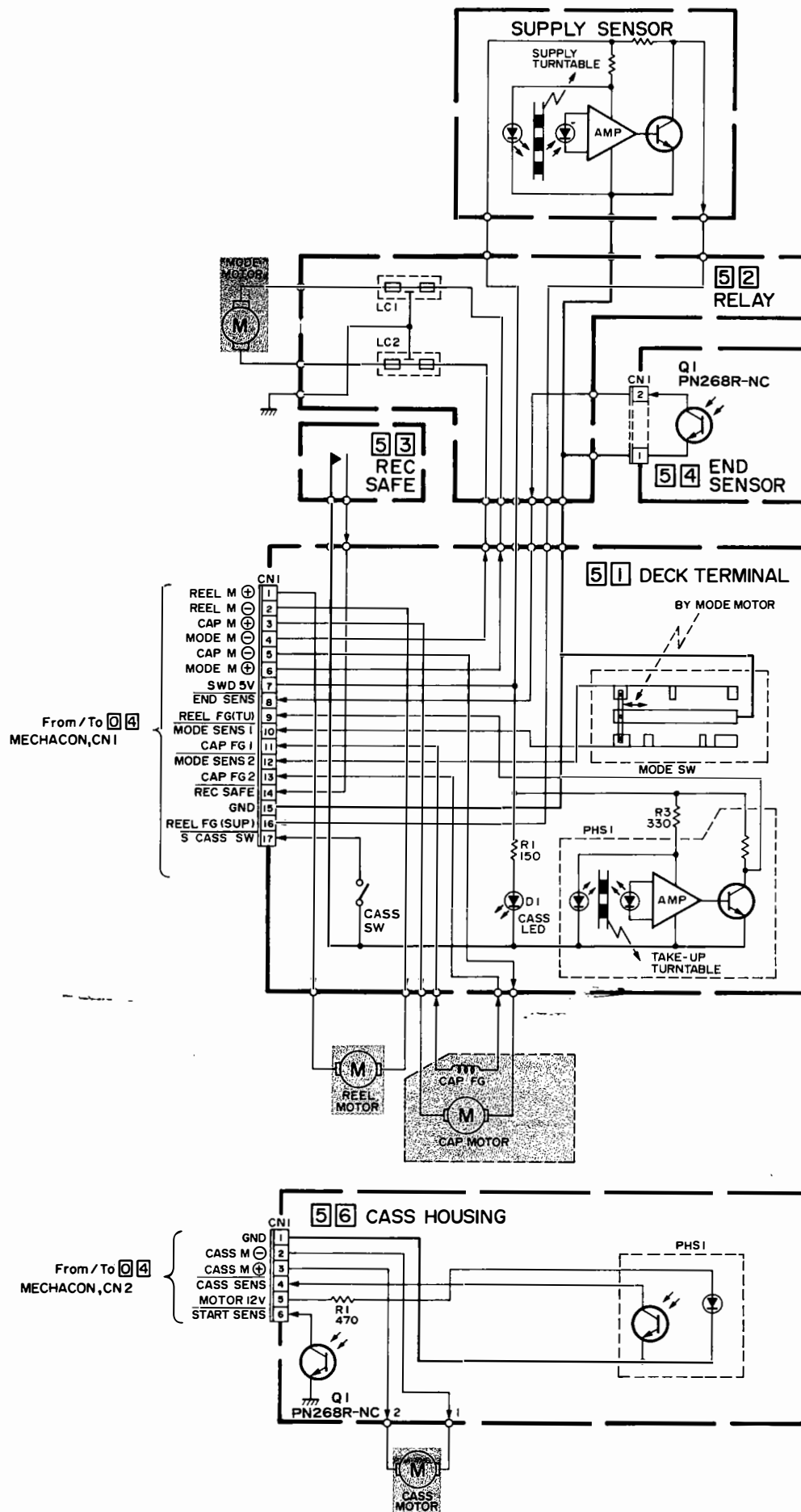
3.12 POWER TRANSFORMER CIRCUIT BOARD



3.13 MECHANISM CONTROL SCHEMATIC DIAGRAM



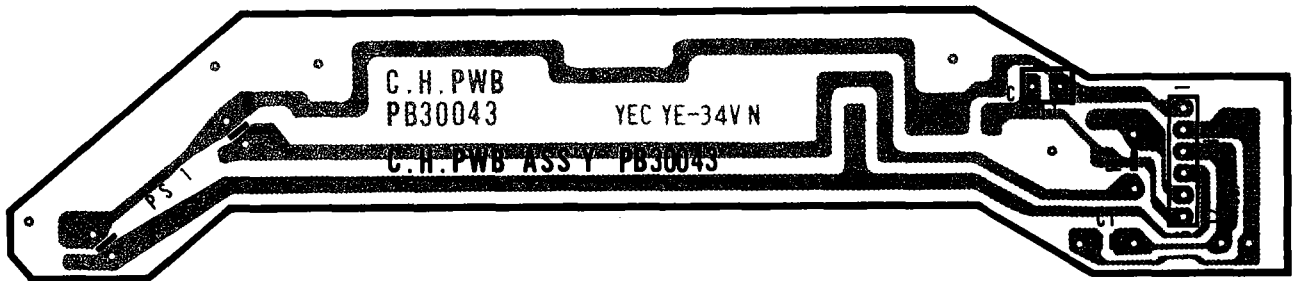
3.14 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY SCHEMATIC DIAGRAMS



6

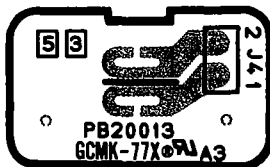
3.15 CASSETTE HOUSING, REC SAFETY, END SENSOR, RELAY, DECK TERMINAL, MECHANISM CONTROL AND AUDIO/CONTROL HEAD CIRCUIT BOARDS

— CASSETTE HOUSING —



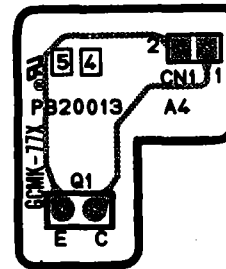
4

— REC SAFETY —



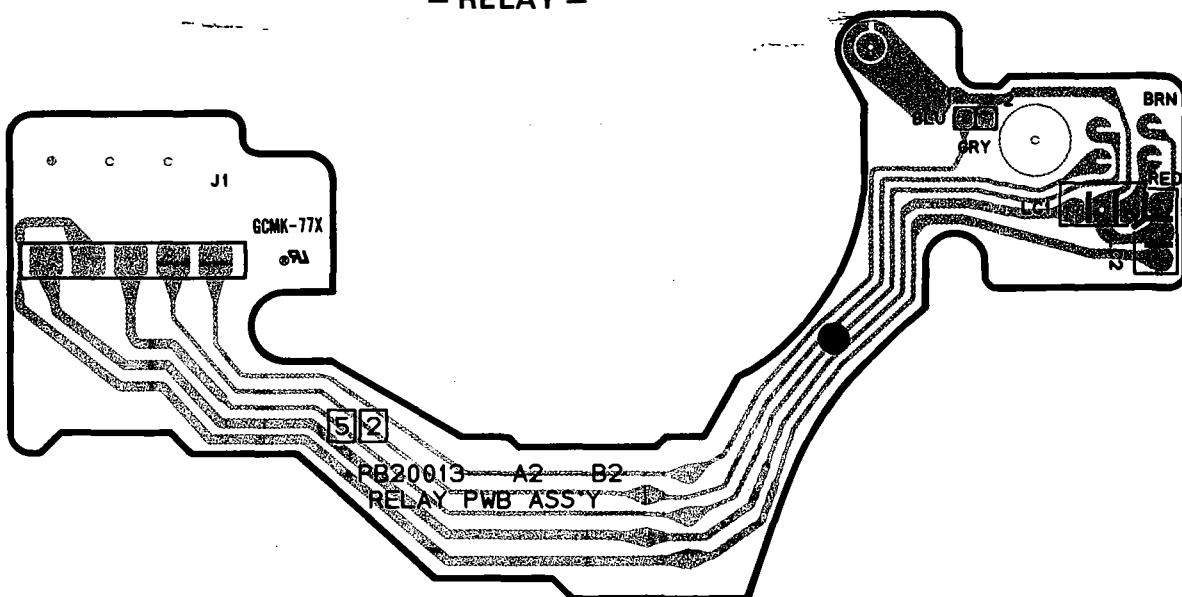
3

— END SENSOR —



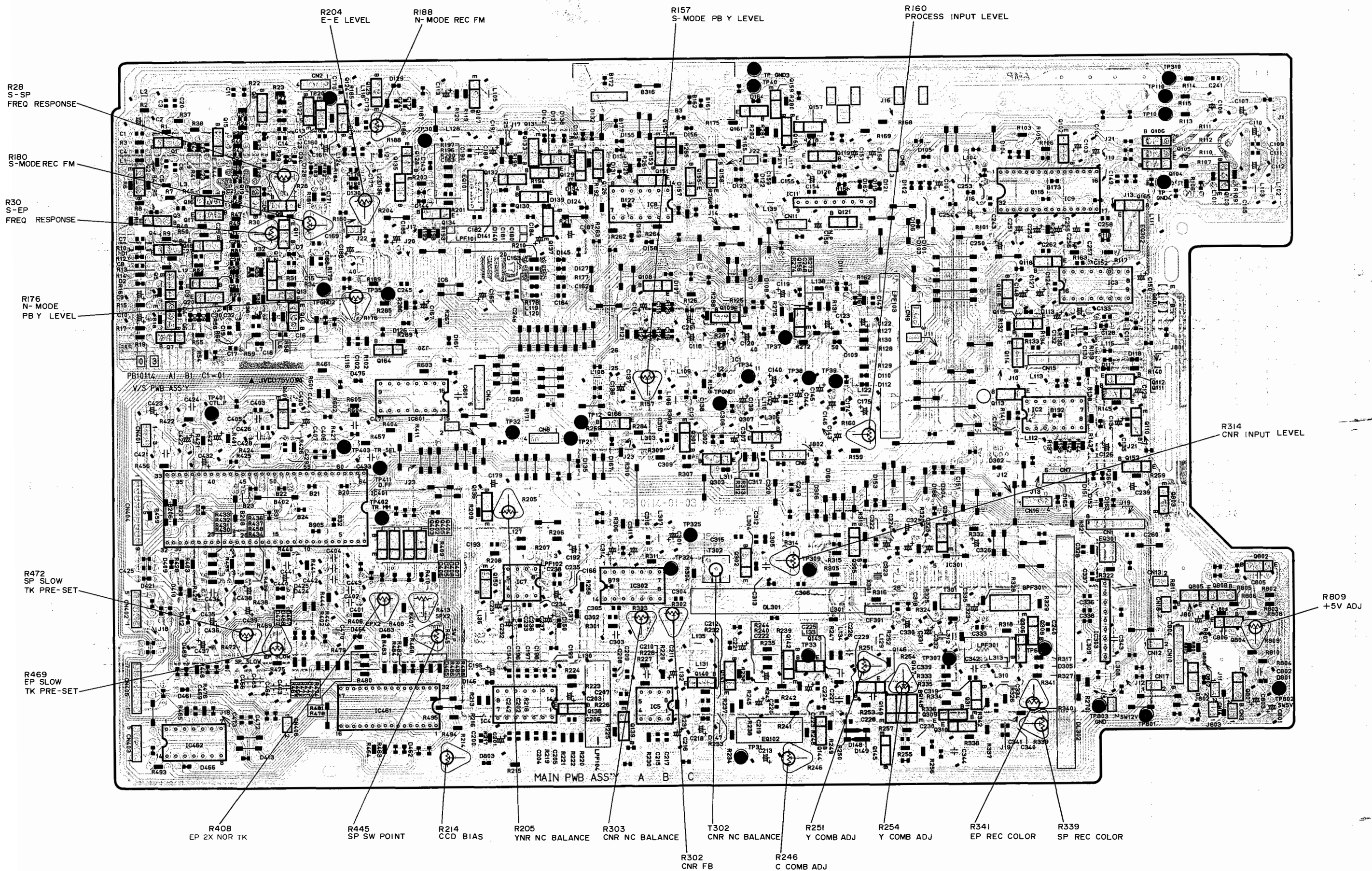
2

— RELAY —

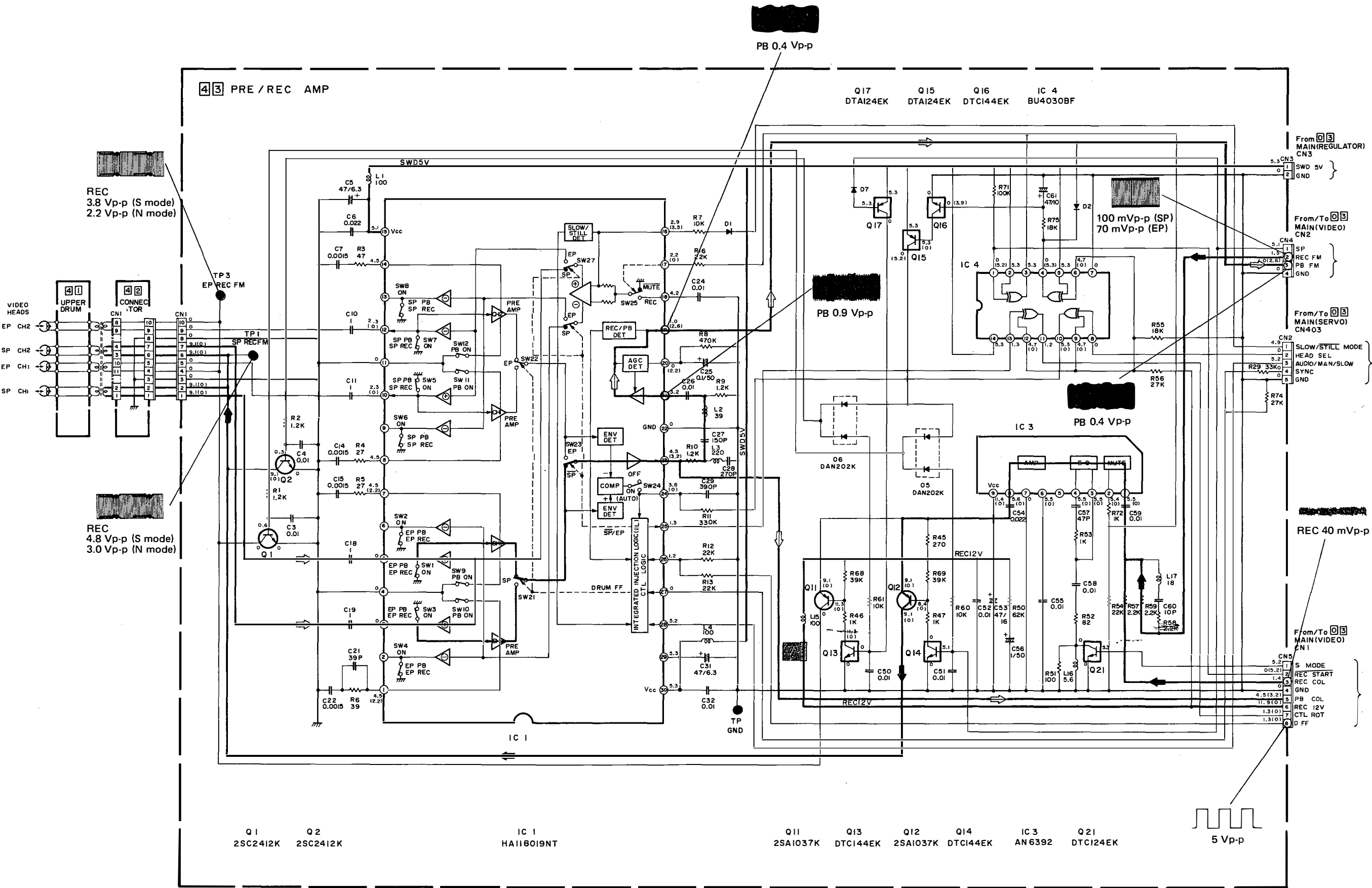


1

3.20 MAIN (SERVO, VIDEO, REGULATOR AND ON SCREEN SWITCHER) CIRCUIT BOARD

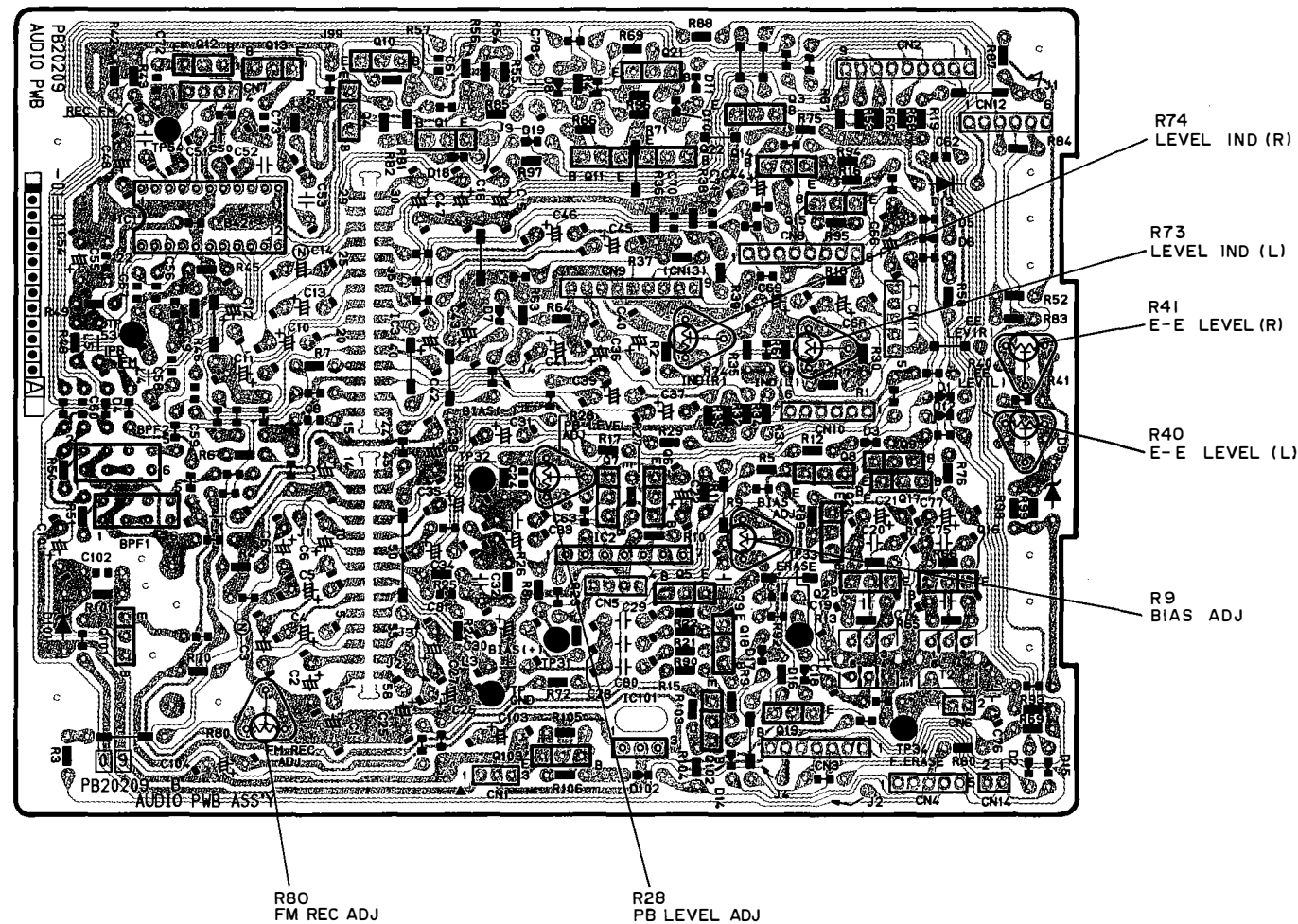


3.21 PRE/REC AMP SCHEMATIC DIAGRAM

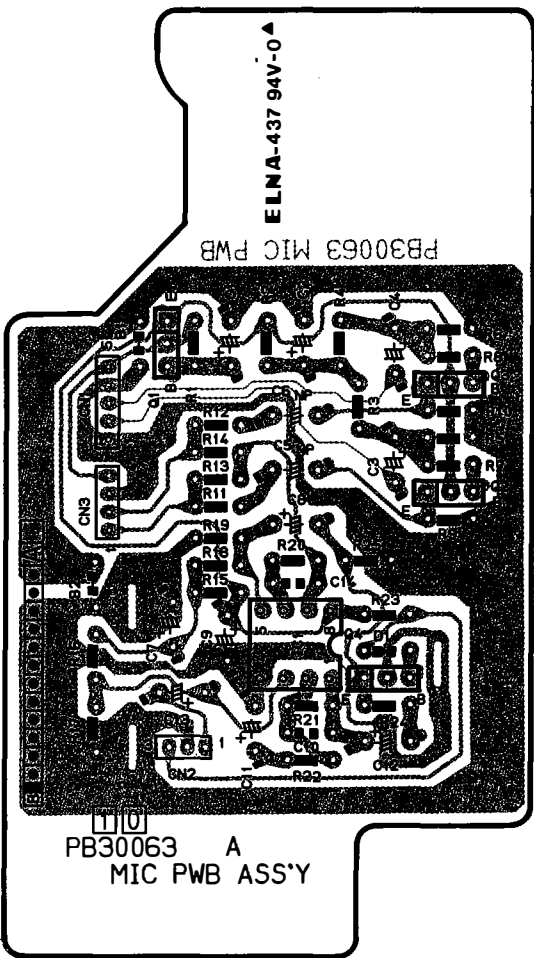


3.26 AUDIO, TERMINAL (AUDIO), MIC AMP AND JACK CIRCUIT BOARDS

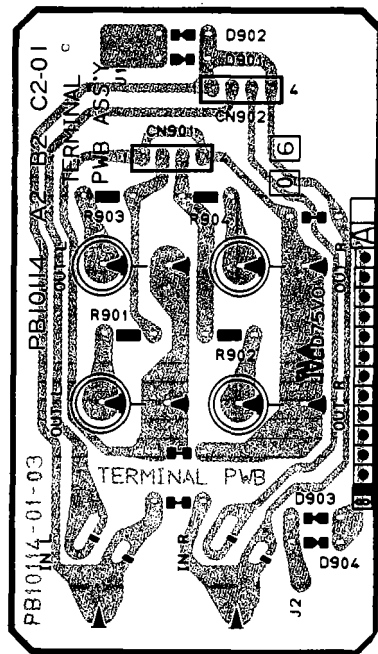
— AUDIO —



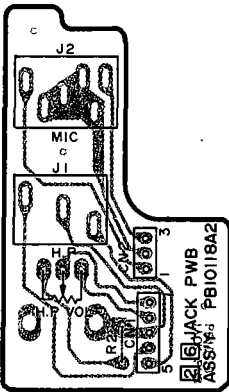
— MIC AMP —



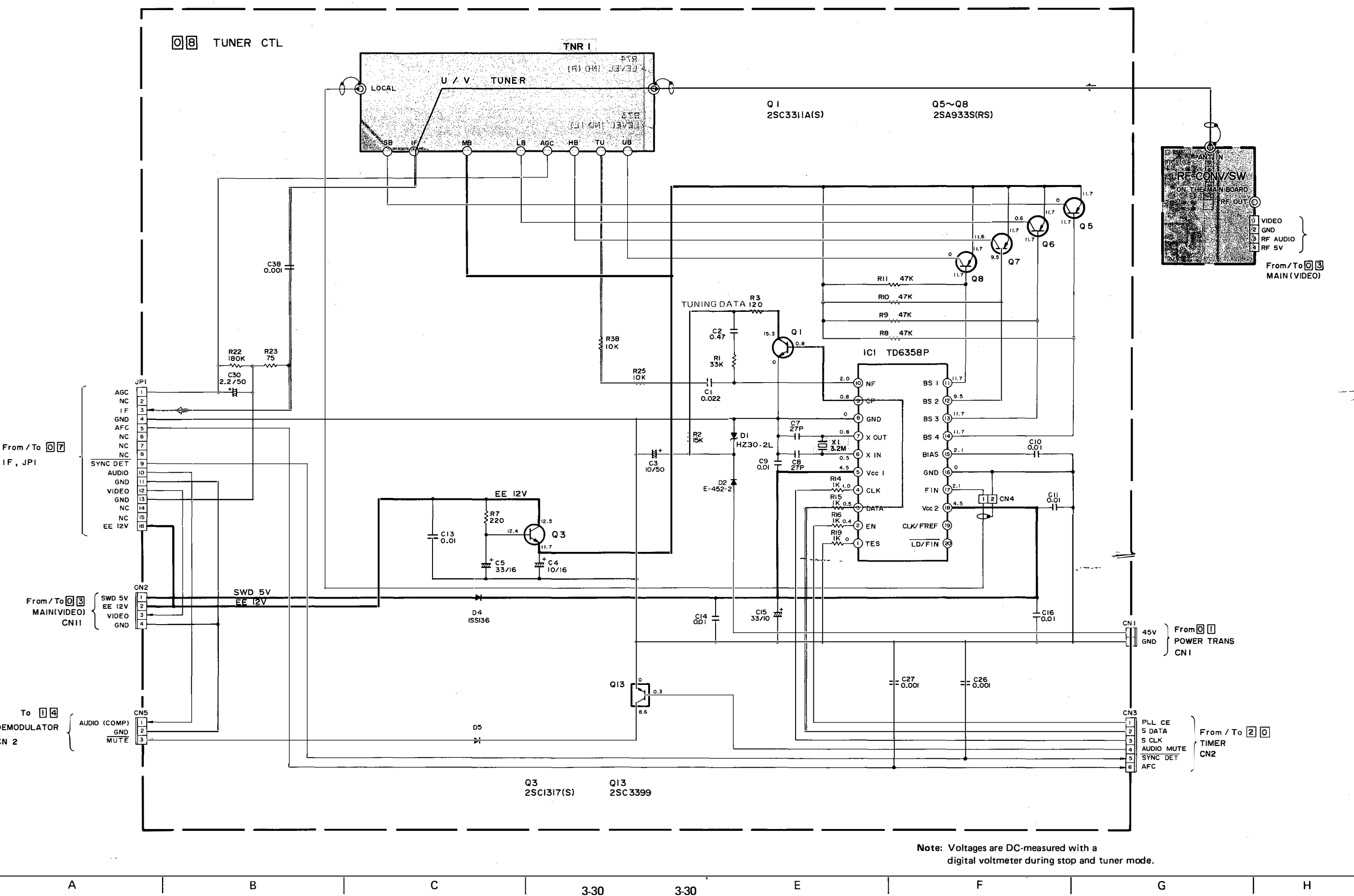
— TERMINAL (AUDIO) —



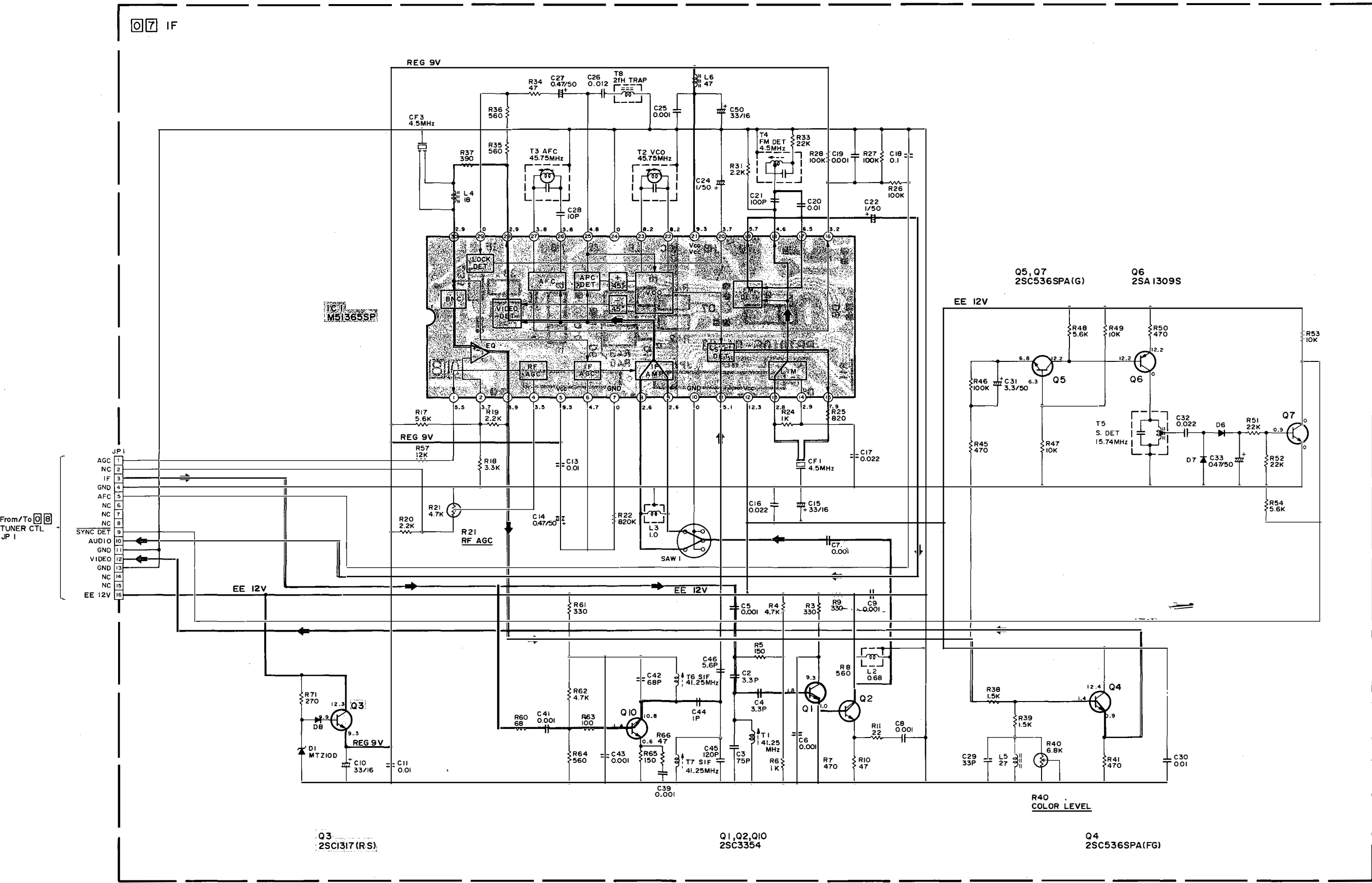
— JACK —

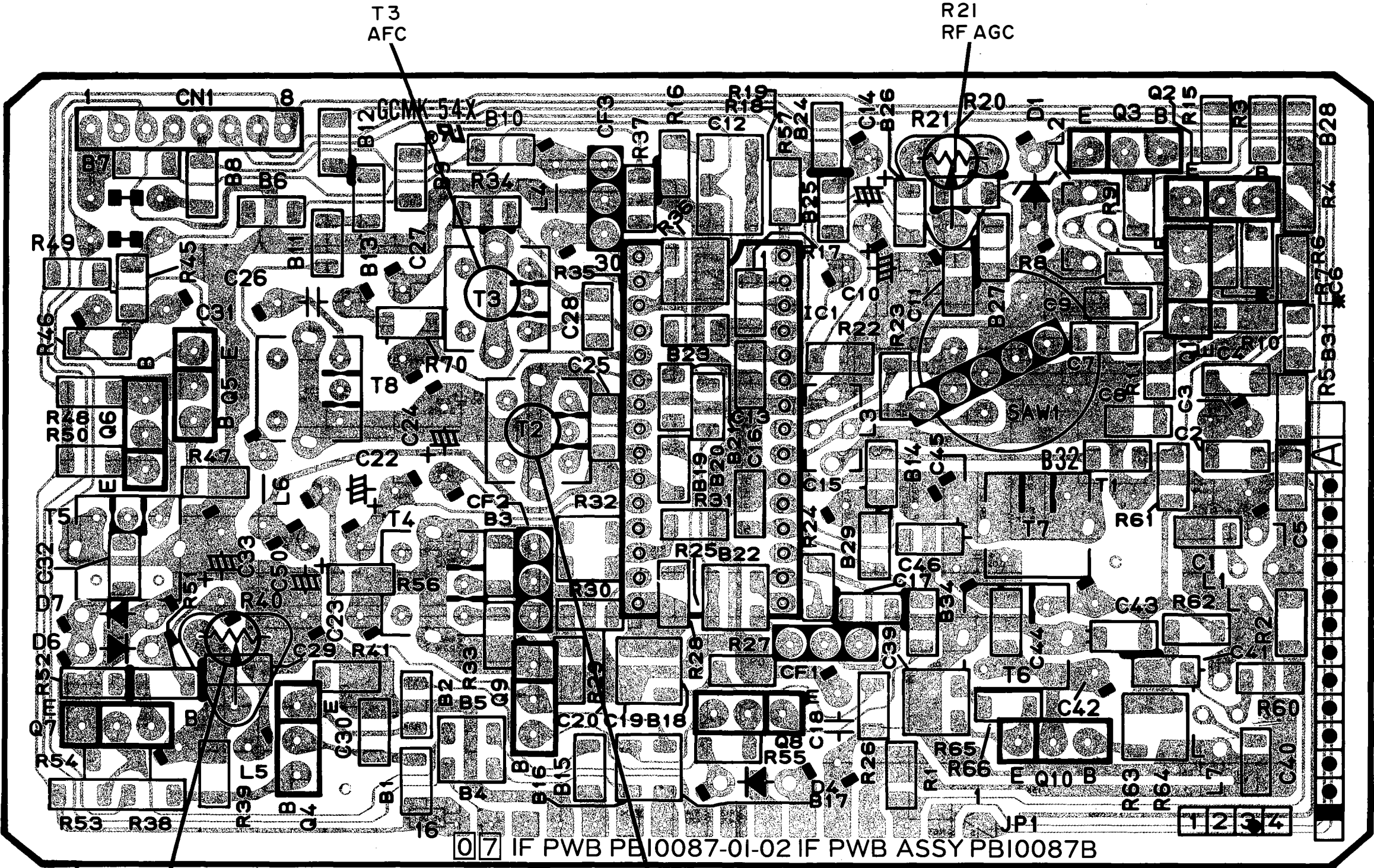


3.27 TUNER CONTROL SCHEMATIC DIAGRAM

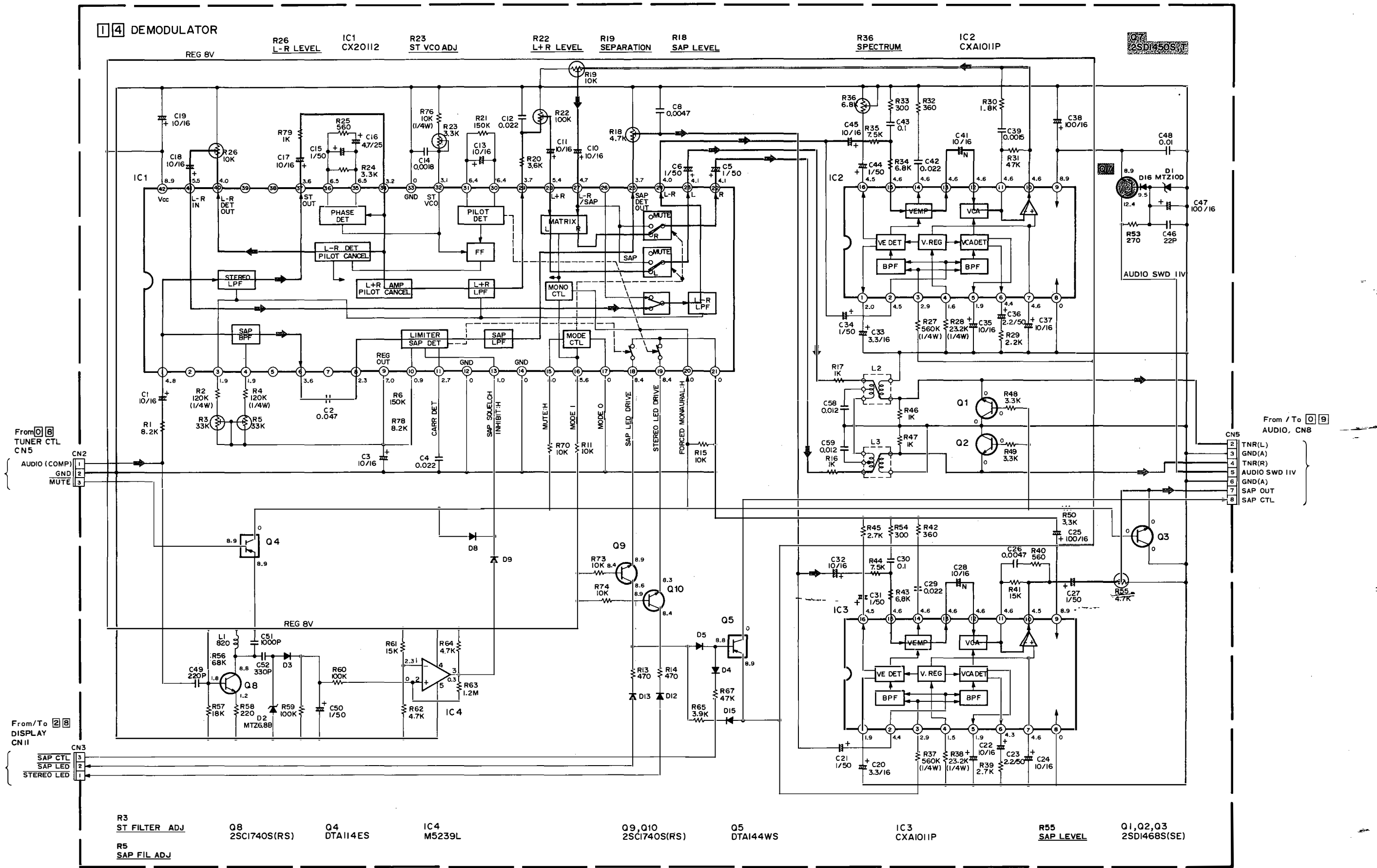


3.29 IF SCHEMATIC DIAGRAM





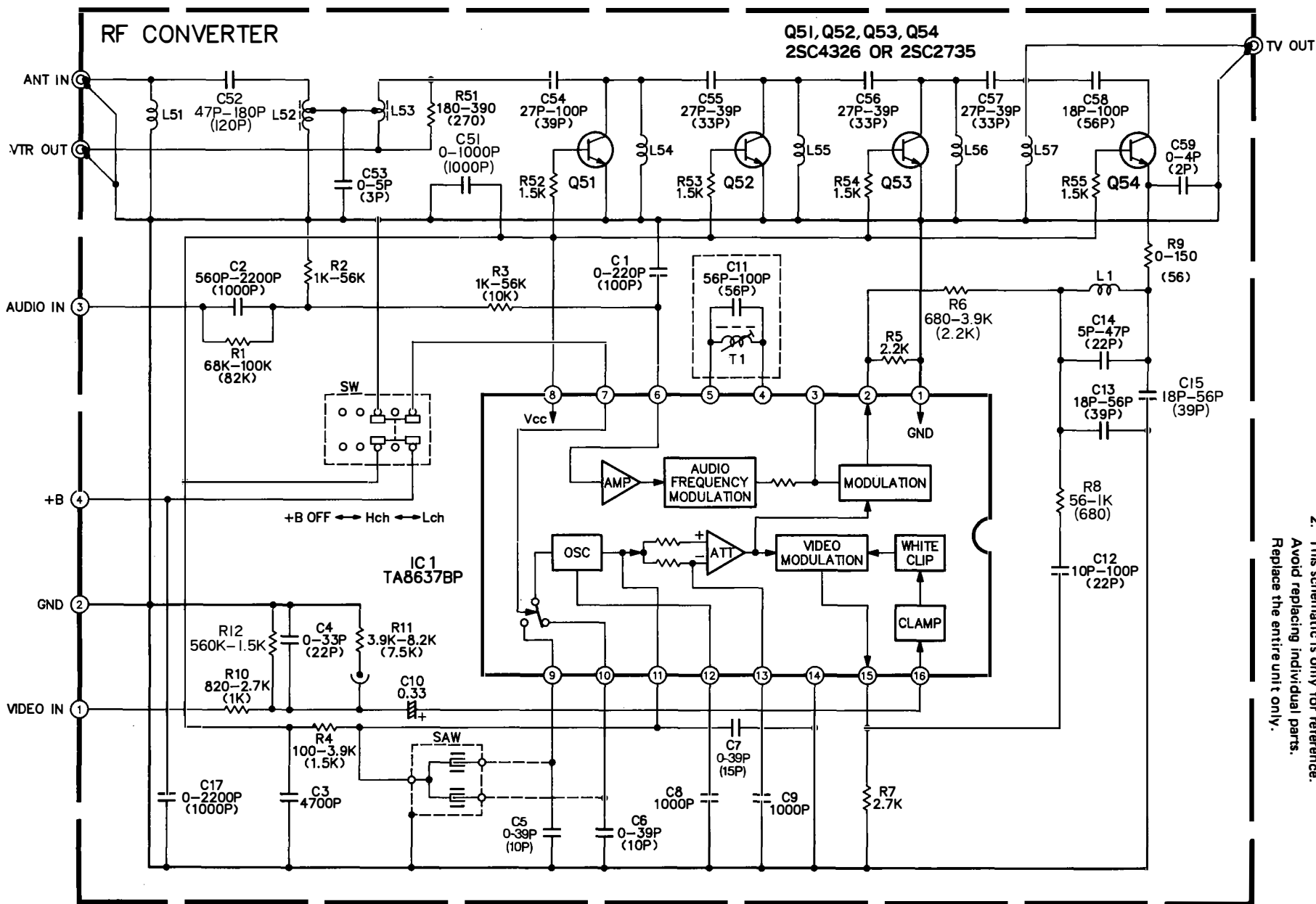
3.31 DEMODULATOR SCHEMATIC DIAGRAM



– TIMER –

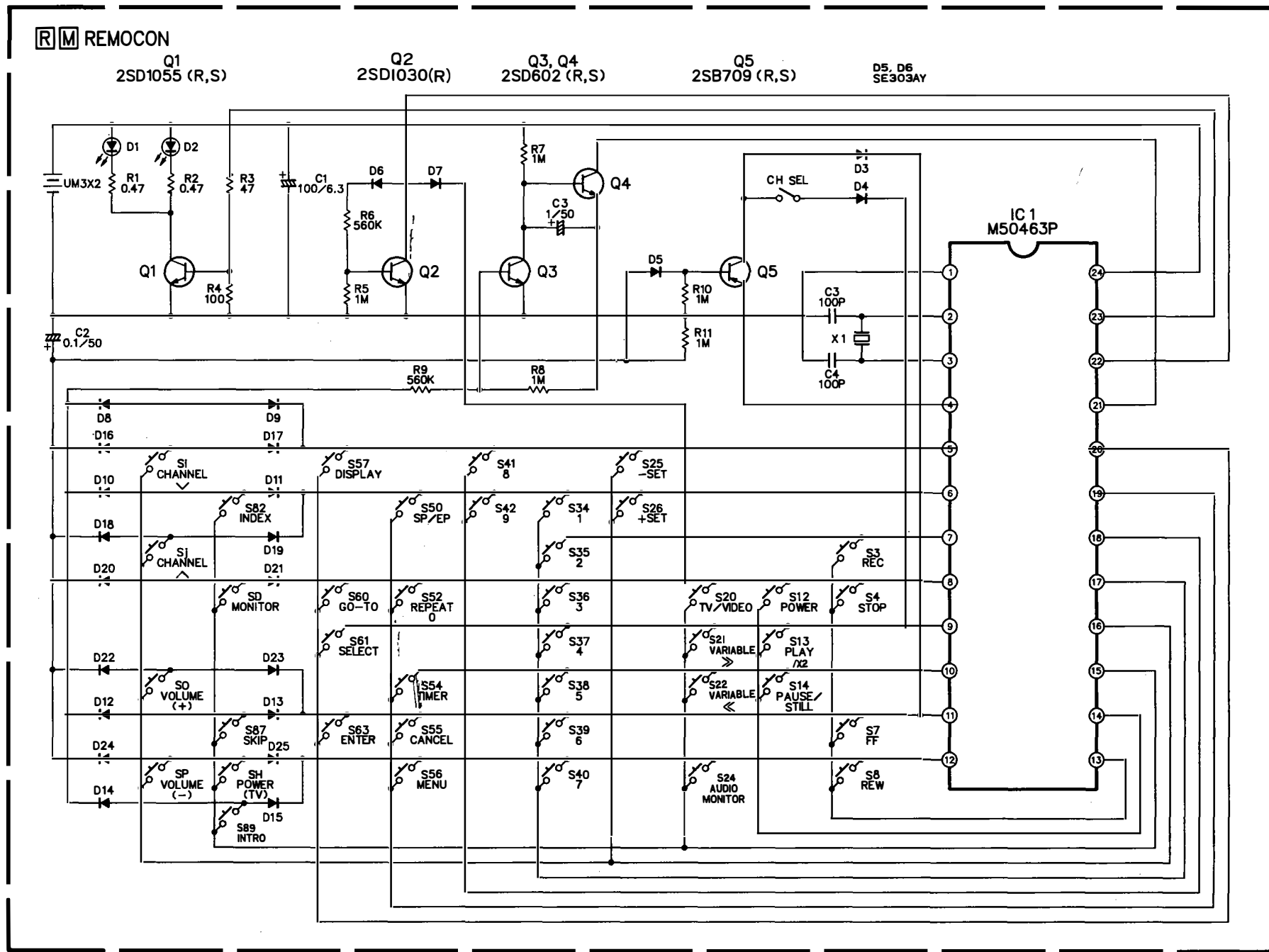


3.36 RF CONVERTER AND SWITCH SCHEMATIC DIAGRAM



- Notes:
1. All parts shown in this schematic are critical for safety.
 2. This schematic is only for reference. Avoid replacing individual parts. Replace the entire unit only.

3.37 REMOTE CONTROL SCHEMATIC DIAGRAM



- Notes:
1. All parts shown in this schematic are critical for safety.
 2. This schematic is only for reference. Avoid replacing individual parts. Replace the entire unit only.

SECTION 4

EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the Δ symbol are critical for safety. Replace only with specified part numbers.

NOTE:

















[M] indicates mechanical symbol number.

4.1 STANDARD PART NUMBER CODING










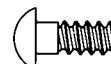

4.1.1 Screw coding

Standard screw part numbers are as follows.

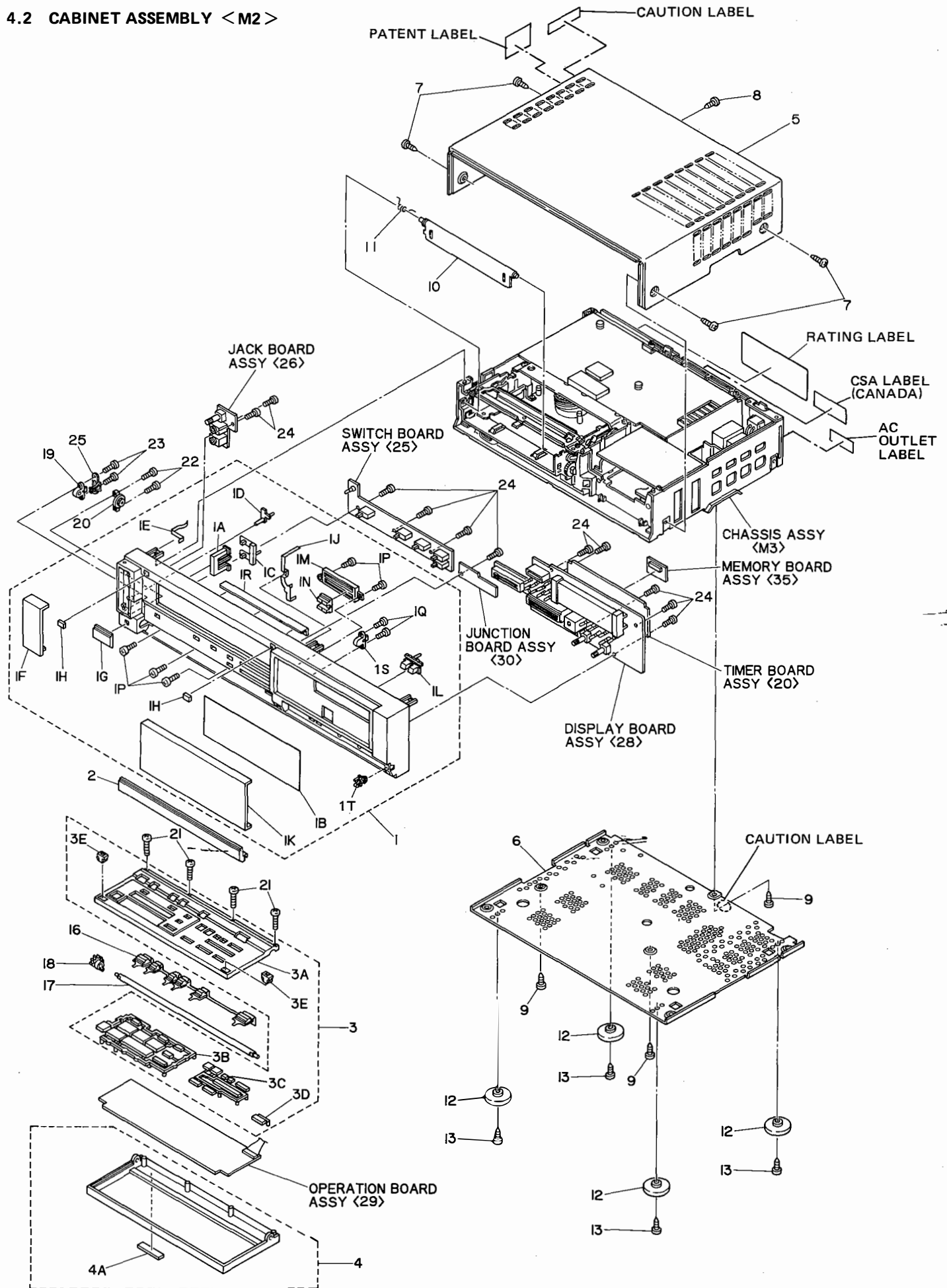
<p>Type of screw (in capital letters)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">1 Shape of screw head (in capital letters)</div> <div style="text-align: center;">2 Material (in capital letters)</div> <div style="text-align: center;">3 Shape of thread (in capital letters)</div> <div style="text-align: center;">4 Nominal diameter (in figures)</div> <div style="text-align: center;">5 Length (in figures)</div> <div style="text-align: center;">6 Surface treatment (in capital letters)</div> </div>	<p>Type of screw (first digit)</p> <p>S Normal screws</p> <p>D Assembled machine screws (with plain and spring washers)</p> <p>L " (with spring washer)</p> <p>N " (with plain washer)</p> <p>F Feather screws</p> <p>G Washer head tapping screws</p> <p>M Wood screws</p>	<p>Shape of screw head (second digit)</p> <p>B Brazier head</p> <p>D Binding head</p> <p>H Oval countersunk head</p> <p>P Pan head</p> <p>R Round head</p> <p>S Flat head</p> <p>T Truss head</p> <p>W Washer head (machine screws)</p> <p>X Toothed head</p>
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<p>-Type of screw (first digit) -</p> <div style="display: flex; justify-content: space-around;">        </div>	<p>- Shape of screw head (second digit) -</p> <div style="display: flex; justify-content: space-around;">          </div> <p style="text-align: right;">Length</p>
---	--

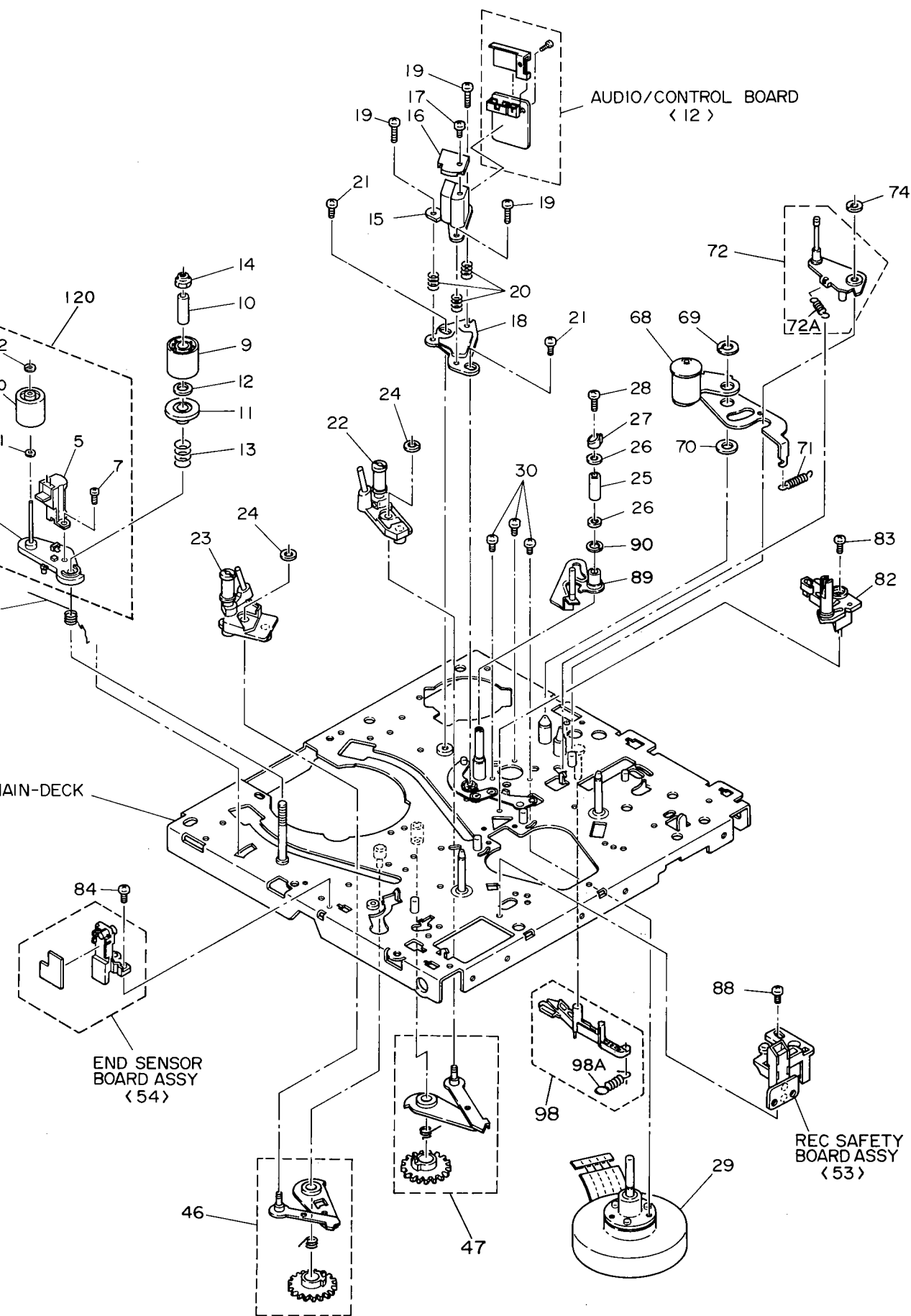
<p>Material (third digit)</p> <table border="0"> <tr> <td>S Steel</td> <td>N Nickel silver</td> </tr> <tr> <td>E Stainless steel</td> <td>Y Cast brass</td> </tr> <tr> <td>C Cast iron</td> <td>A Aluminum</td> </tr> <tr> <td>U Copper</td> <td>Z Zinc alloy</td> </tr> <tr> <td>B Brass</td> <td>K Polycarbonate</td> </tr> <tr> <td>P Phosphor bronze</td> <td></td> </tr> </table>	S Steel	N Nickel silver	E Stainless steel	Y Cast brass	C Cast iron	A Aluminum	U Copper	Z Zinc alloy	B Brass	K Polycarbonate	P Phosphor bronze		<p>Shape of thread (fourth digit)</p> <p>P Cross recessed head screws</p> <p>(-) Slotted head machine screws</p> <p>X Slotted-cross recessed head machine screws</p> <p>K Cross recessed head machine screws for precision equipment (type 1)</p> <p>H " (type 3)</p> <p>A Cross recessed head tapping screws (type 1)</p> <p>B " (type 2)</p> <p>C " (type 3)</p> <p>E Cross recessed head special tapping screws (brand : evertight)</p> <p>F " (brand : P-tight)</p> <p>T " (brand : taptight)</p> <p>G " (brand : taptight)</p>
S Steel	N Nickel silver												
E Stainless steel	Y Cast brass												
C Cast iron	A Aluminum												
U Copper	Z Zinc alloy												
B Brass	K Polycarbonate												
P Phosphor bronze													

<p>- Shape of thread (fourth digit) -</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Cross recessed head</p>  </div> <div style="text-align: center;"> <p>Slotted head</p>  </div> <div style="text-align: center;"> <p>Slotted-cross recessed head</p>  </div> <div style="text-align: center;"> <p>P, (-), X, K, H</p>  </div> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> <div style="text-align: center;"> <p>C</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>E</p>  </div> <div style="text-align: center;"> <p>F</p>  </div> <div style="text-align: center;"> <p>G</p>  </div> <div style="text-align: center;"> <p>T</p>  </div> </div>	<p>Nominal diameter (fifth and sixth digits)</p> <p>The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.</p>	<p>Surface treatment (ninth digit)</p> <p>Z Dichromate treatment after galvanizing (MFZn II-C)</p> <p>N Nickel plating (MFNi II, MFNi I)</p> <p>R Chromium plating (MBCr II, MBCr I)</p> <p>G Silver plating (SP4)</p> <p>B Black coating after plating</p> <p>F Blackening of iron (FB)</p> <p>M Blackening after galvanizing</p> <p>K Pickling of brass (PF2)</p> <p>P Phosphate treatment</p> <p>W Uni-chrome plating</p> <p>L Coated with transparent paint</p> <p>A Colored red after galvanizing (MFZn II-C)</p> <p>C Colored blue after galvanizing (MFZn II-C)</p> <p>T Colored green after galvanizing (MFZn II-C)</p> <p>V Colored purple after galvanizing (MFZn II-C)</p>
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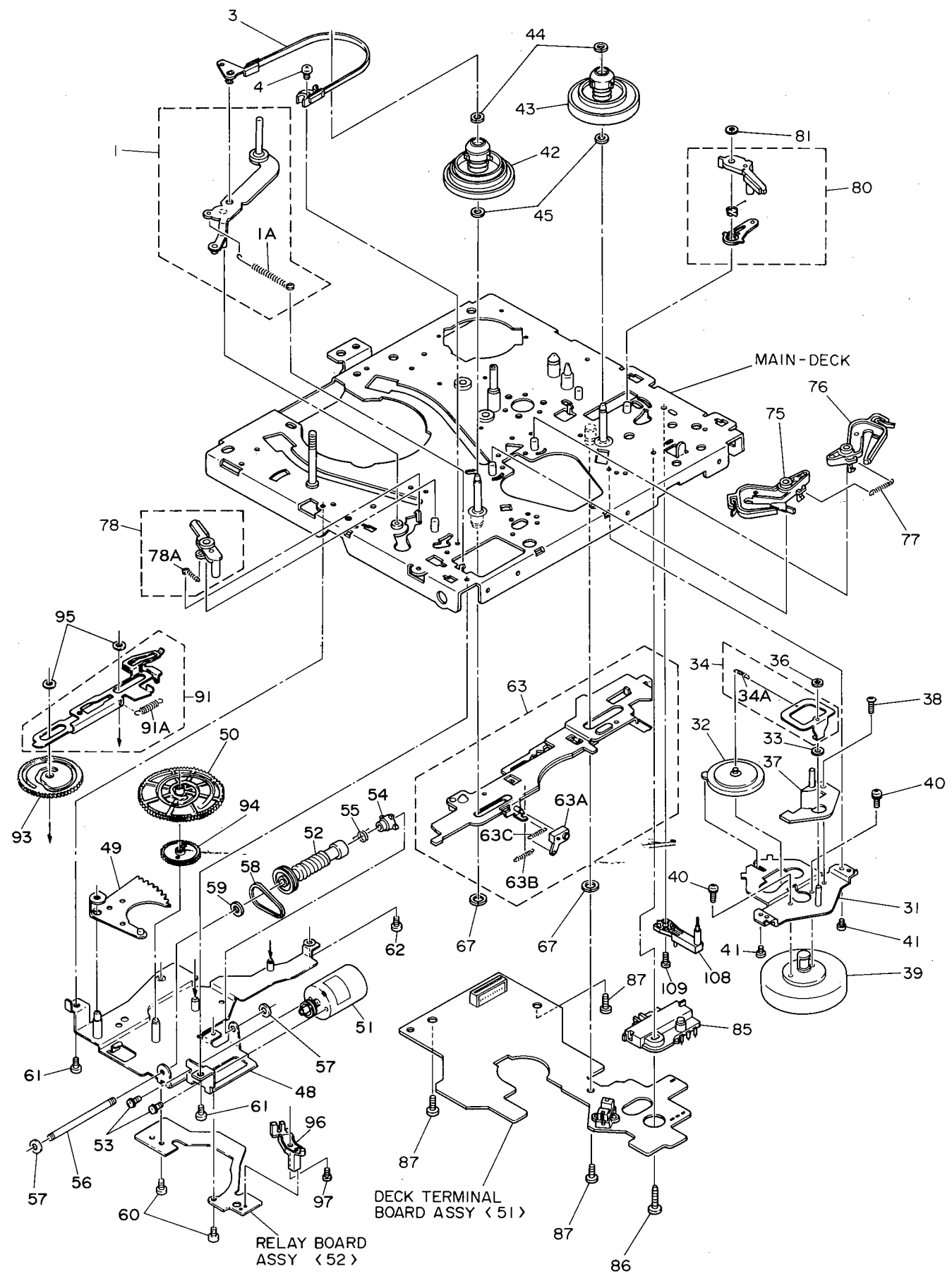
4.2 CABINET ASSEMBLY <M2>



MECHANISM ASSEMBLY (1) < M4 >



MECHANISM ASSEMBLY (2) < M4 >



#△ REF NO. PART NO. PART NAME, DESCRIPTION

* 4. MECHANISM ASSEMBLY <M4> *

1	PQ41944A-7	TENSION ARM ASSY
1A	PQ41952-3	SPRING
3	PQ41948A	TENSION BAND ASSY
4	SDST2606Z	TAPPING SCREW
5	PU57641-2	FULL ERASE HEAD
6	PQ43299A	FULL ERASE HEAR SUB ASSY
7	SPSG2606Z	SCREW
8	PQ41954-1-1	TORSION SPRING
9	PQ41955	IMPEDANCE ROLLER
10	PQ41956	COLLAR
11	PQ41957	LOWER FLANGE
	OR PQ42958	LOWER FLANGE
12	PQM30018-39	SPACER
	OR PQM30018-50	SPACER
13	PQM30002-124	COMPRESSION SPRING
14	PQ40353	NYLON NUT
15	PU60453-4	AUDIO/CONTROL HEAD
16	PQ43403	SHIELD CAP
17	HPSP1710N	SCREW
18	PQ42984-2	HEAD BASE
19	SPSP2608Z	SCREW,X3
20	PU30080-49	SPRING,X3
21	SDSP2606Z	SCREW,X2
22	PU60557	POLE BASE ASSY (TAKE-UP)
	OR PU59994	POLE BASE ASSY (TAKE-UP)
23	PU60556-2	POLE BASE ASSY(SUPPLY)
24	PQM30017-5	SLIT WASHER,X2
25	PU53629-3	TAPE GUIDE
26	PQ40268-2	GUIDE FLANGE,X2
27	PQ42999-2-1	G.POLE CAP
28	SDSP2006Z	SCREW
△ 29	PU60201V	CAPSTAN MOTOR
30	SPSP2605N	SCREW,X3
31	PQ41974A-3	REEL MOTOR BRACKET ASSY
32	PU58645-1-4	IDLER ARM
33	Q03093-834	WASHER
34	PQ41976A-1	SPRING ARM ASSY
34A	PQ42212-1-4	SPRING
36	PQM30017-22	SLIT WASHER
37	PQ41978	HOLDER
38	SPST2606Z	TAPPING SCREW
△ 39	PU59926V	REEL MOTOR
40	LPSP2604Z	SCREW,X2
41	SPST2606Z	TAPPING SCREW,X2
42	PU59250-1-2	REEL DISK (SUPPLY)
43	PU58638-1-2	REEL DISK (TAKE-UP)
44	PQM30017-5	SLIT WASHER,X2
45	Q03093-828	WASHER,X2
46	PQ41979A-5	LOADING ARM ASSY (SUPPLY)
47	PQ41985B-3	LOADING ARM ASSY (TAKE-UP)
48	PQ42973A	CAM BKT ASSY
49	PQ41994A-3	ARM GEAR ASSY
50	PQ20577	CONTROL CAM
△ 51	PQ41996B	MODE MOTOR ASSY
	OR PQ41996C	MODE MOTOR ASSY
52	PQ41998A	WORM ASSY
53	LPSP2604Z	SCREW,X2
54	PQ42001	WINDMILL
55	PQ42002	CLUTCH SPRING
56	PQ42003	WORM SHAFT
57	PQM30017-5	SLIT WASHER,X2
58	PQM30003-20	BELT (MODE)

#△ REF NO. PART NO. PART NAME, DESCRIPTION

59	PQM30018-22	SPACER
60	SPST2606Z	TAPPING SCREW,X2
61	SPST2606Z	TAPPING SCREW,X2
62	SPSP2603Z	SCREW
63	PQ42038C	PLATE ASSY
63A	PQ31044-1-2	LOCK LEVER
63B	PQM30001-223	TENSION SPRING
63C	PQM30001-211	TENSION SPRING
67	PQM30017-28	SLIT WASHER,X2
68	PQ42006B	PINCH ROLLER ARM ASSY
69	PQM30017-28	SLIT WASHER
70	Q03093-833	WASHER
71	PQM30001-229	TENSION SPRING
72	PQ42013B-4	GUIDE ARM ASSY
72A	PQ42029	SPRING
74	PQM30017-6	SLIT WASHER
75	PQ42019B-6	MAIN BRAKE ASSY (SUPPLY)
76	PQ42020B	MAIN BRAKE ASSY (TAKE-UP)
77	PQM30001-216	TENSION SPRING
78	PQ42021A-3	SUB BRAKE ASSY (SUPPLY)
78A	PQ42023-1-2	TENSION SPRING
80	PQ42037A-2	SUB BRAKE ASSY (TAKE-UP)
81	PQM30017-6	SLIT WASHER
82	PU59925-1-1	LED HOLDER
83	SPST2606Z	TAPPING SCREW
84	SPST2606Z	TAPPING SCREW
85	PU60444	SLIDE ENCODER
86	SDSP2610Z	SCREW
87	SDSP2606Z	SCREW,X3
88	SDST2606Z	TAPPING SCREW
89	PQ42979A-2	HALF LOADING ARM ASSY
90	PQM30017-29	SLIT WASHER
91	PQ42974A	SLIDE CAM PLATE ASSY
91A	PQM30001-224	SPRING
93	PQ31677	HALF LOADING CAM
94	PQ42963	SECOND GEAR
95	PQM30017-24	SLIT WASHER,X2
96	PU59251-1-2	REELSENSOR(SUPPLY)
97	SPSP2603Z	SCREW
98	PQ43295A-1	MOTOR BRAKE ASSY
98A	PQ43296	SPRING
108	PU59919-1-1	CASSETTE SWITCH
109	SDST2608Z	SCREW
110	PQ43298A	ROLLER ASSY
111	Q03093-829	WASHER
112	PQM30017	SLIT WASHER
120	PQ43330A	FULL ERASE HEAD ASSY

SECTION 5

ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the  symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS—All resistance values are in ohms (Ω), unless otherwise indicated.

k	: 1,000 (Kilo)
M	: 1,000,000 (Mega)
Chip R	: Chip Resistor
Chip VR	: Chip Variable Resistor
Comp. R	: Composition Resistor
CR	: Carbon Film Resistor
FR	: Fusible Resistor
MFR	: Metal Film Resistor
MPR	: Metal Plate Resistor
OMR	: Oxide Metal Film Resistor
PMR	: Precision Metal Film Resistor
UFR	: Unflammable Resistor
VR	: Variable Resistor (Potentiometer)
WR	: Wire Wound Resistor

CAPACITORS—All capacitance values are in μF , unless otherwise indicated.

pF	: $\mu\mu\text{F}$ (Pico farad)
C Cap	: Ceramic Capacitor
Chip Cap	: Chip Capacitor
Chip T Cap	: Chip Tantalum Capacitor
E Cap	: Electrolytic Capacitor
FM Cap	: Film Mica Capacitor
LL Cap	: Low Leak Current Electrolytic Capacitor
MM Cap	: Metalized Mylar Capacitor
MP Cap	: Metalized Paper Capacitor
MY Cap	: Mylar Capacitor
NP Cap	: Non-polar Capacitor
PC Cap	: Polycarbonate Capacitor
PP Cap	: Polypropylene Capacitor
PS Cap	: Polystyrol Capacitor
T Cap	: Tantalum Capacitor
TF Cap	: Thin Film Capacitor
TR Cap	: Trimmer Capacitor

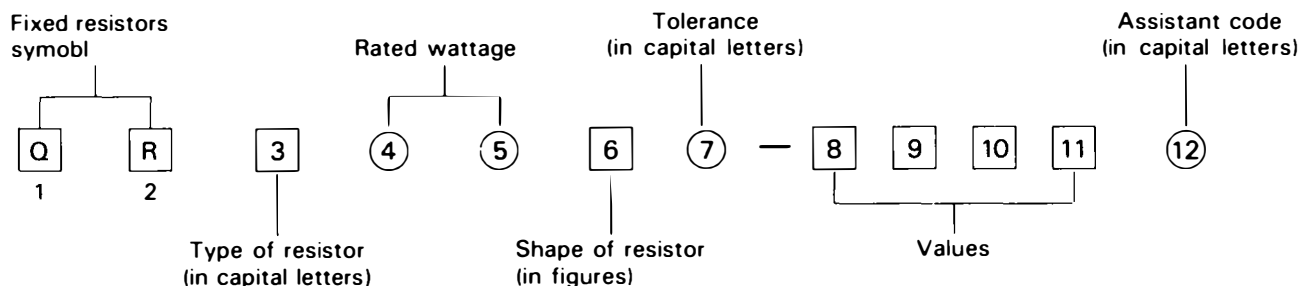
NOTES:

- [2 digits] indicates circuit board symbol number.
- "X " indicates quantity per set.

5.1 STANDARD PART NUMBER CODING

5.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.



Type of resistor (third digit)	Rated wattage (fourth and fifth digits)	Tolerance (seventh digit)	Assistant code (twelfth digit)
C Composition resistors	A0 1/10 W	F $\pm 1\%$	A Small type
D Carbon film resistors	18 1/8 W	G $\pm 2\%$	B Small type
F Unflammable resistors	16 1/6 W	J $\pm 5\%$	S Small type
G Oxide metal film resistors	14 1/4 W	K $\pm 10\%$	Y Lead taping
H Fusible resistors	12 1/2 W	M $\pm 20\%$	Z Lead taping
M Metal plate resistors	01 1 W		
S Metal glazed resistors	02 2 W		
V Precision metal film resistors	03 3 W		
W Wire wound resistors	04 4 W		
X Metal film resistors	05 5 W		
Z Special resistors	06 6 W		
	07 7 W		
	75 7.5 W		
	08 8 W		
	10 10 W		
	15 15 W		
	A6 16 W		
	20 20 W		
	30 30 W		

Values (eighth — tenth or eleventh digits)
examples:
R47 0.47 Ω
4R7 4.7 Ω
470 47×10^0 47 Ω
471 47×10^1 470 Ω
472 47×10^2 4.7 k Ω
473 47×10^3 47 k Ω
474 47×10^4 470 k Ω
475 47×10^5 4.7 M Ω
QRV resistance shown by four digits:
4640 464×10^0 464 Ω
4641 464×10^1 4.64 k Ω
4642 464×10^2 46.4 k Ω

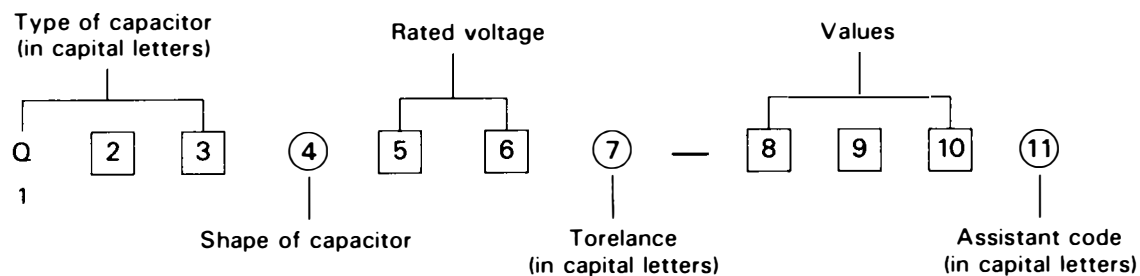
Shape of resistor (sixth digit)

Note:  indicates flame retardant resistor.

Type of resistor Shape of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type							
9			Lug (C) type							

5.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.



Ceramic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QE8	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Normal		Flame retardant	
			Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Sixth digit Fifth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	+ 100 % - 10 %	M	± 20 %
F	± 1 %	N	± 30 %
G	± 2 %	P	+ 100 % - 0 %
H	+ 50 % - 10 %	R	+ 30 % - 10 %
J	± 5 %	X	+ 40 % - 20 %
K	± 10 %	Z	+ 80 % - 20 %

Values (eighth — tenth digits)

Example : Values are in picofarads

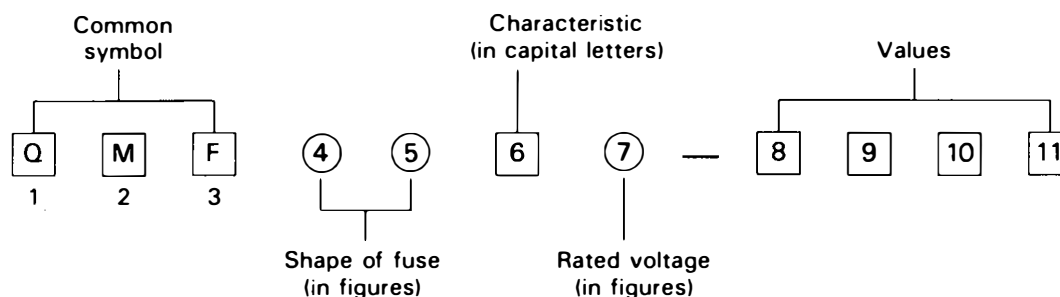
101	.....	10×10^1 pF	.....	100 pF
102	.....	10×10^2 pF	.....	1,000 pF (0.001 μ F)
103	.....	10×10^3 pF	.....	10,000 pF (0.01 μ F)
104	.....	10×10^4 pF	.....	100,000 pF (0.1 μ F)
105	.....	10×10^5 pF	.....	1 μ F
5R0	.....		.....	5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping
Y	Lead taping

5.1.3 Fuse coding

Standard fuse part numbers are as follows.



Shape of fuse (fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage (seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V
	1.25 – 6.3 A : AC125 V

Values (eighth-tenth or eleventh digits)

example:

R63	.....	0.63 A
1R0	.....	1.0 A
2R5	.....	2.5 A
100	.....	10 A
R315	.....	0.315 A
1R25	.....	1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

#	REF NO.	PART NO.	PART NAME, DESCRIPTION

* 5. POWER SUPPLY BOARD ASSEMBLY <01> *			

PWBA	PB20215B	POWER TRANS BOARD ASSY	
Q1	2SB1186 (DE)	TRANSISTOR	
Q2	2SD1796	TRANSISTOR	
Q3	2SD1796	TRANSISTOR	
D1	11E2	DIODE	
	OR 11ES2	DIODE	
	OR 1SR139-200-T	DIODE	
	OR S5688G	DIODE	
	OR ERA15-02	DIODE	
D2	11E2	DIODE	
	OR 11ES2	DIODE	
	OR ERA15-02	DIODE	
	OR 1SR139-200-T	DIODE	
	OR S5688G	DIODE	
D3	11E2	DIODE	
	OR 1SR139-200-T	DIODE	
	OR ERA15-02	DIODE	
	OR 11ES2	DIODE	
	OR S5688G	DIODE	
D4	11E2	DIODE	
	OR S5688G	DIODE	
	OR 11ES2	DIODE	
	OR 1SR139-200-T	DIODE	
	OR ERA15-02	DIODE	
D5	1SS131Y	DIODE	
D6	HZ30-2	ZENER DIODE	
D7	1SS133	DIODE	
	OR MA165	DIODE	
△ D8	HZ12C1TE	ZENER DIODE	
DS1	D3SBA10	DIODE ARRAY	
	OR RBV401	DIODE ARRAY	
DS2	D3SBA10	DIODE ARRAY	
	OR RBV401	DIODE ARRAY	
△ R1	QRZ0077-100X	FUSIBLE RESISTOR	
R2	QRD181J-224	RESISTOR	
△ R3	QRD181J-272	RESISTOR	
R4	QRD181J-222	RESISTOR	
R5	QRD181J-821	RESISTOR	
R6	QRD181J-102	RESISTOR	
R7	QRD181J-272	RESISTOR	
△ R101	QRC122K-225E	RESISTOR	
C1	QETB1EM-228	E CAPACITOR	
C2	QETB1EM-478	E CAPACITOR	
C3	QETB1CM-688	E CAPACITOR	
C4	QETC1JM-476	E CAPACITOR	
C5	QETC1JM-476	E CAPACITOR	
C6	QEK61VM-226	E CAPACITOR	
C7	QEK51VM-226	E CAPACITOR	
C8	QETC1CM-476	E CAPACITOR	
C9	QCF31HP-103	CAPACITOR	
C10	QETC0JM-476	E CAPACITOR	
△ C101	QCZ9016-472P	CAPACITOR	
△ POC1	QMP14B0-200E	POWER CORD	
△	OR QMP14B0-200J2	POWER CORD	
△	OR QMP14B0-200	POWER CORD	
△ RY1	PU59848	RELAY	

#	REF NO.	PART NO.	PART NAME, DESCRIPTION

△	A01	QMC0242-007	AC OUTLET
	BKT1	PQ20674	TRANS BRACKET
△	HD1	PU57505	FUSE CLIP,X6
△	HD2	QHS3771-108	STRAIN RELIEF
	HS1	PU36468-1-1	HEAT SINK
	HS2	PU36474	HEAT SINK
	SCW1	SDST3006Z	TAPPING SCREW, X2
	SCW2	SDSB3008Z	TAPPING SCREW, X5
△	SG1	PU22125-2	SPARK GAP
	CN1	PU58844-2	CAP HOUSING
	CN2	PU58844-6	CAP HOUSING
	CN3	PU58844-4	CAP HOUSING
	CN4	PU58844-8	CAP HOUSING
	CN5	PU58844-3	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING
△	F1	QMF51J1-1R6N	FUSE,NOT INCLUDED
△	F2	QMF51J1-3R15N	FUSE,NOT INCLUDED
△	F3	QMF51J1-3R15N	FUSE,NOT INCLUDED

* 6. MAIN/TERMINAL BOARD ASSY<03><06> *			

PWBA	PB10114B-01	MAIN BOARD ASSY	
	-MAIN BOARD ASSEMBLY<03>-		
PWBA1	PB10114B1-01	VIDEO/SERYO BOARD ASSY<03>	
△	RF1	PU60602	RF CONVERTER/SWITCH
	CL1	PU49485-4	WIRE CLAMP
	ETH1	PQ43012	EARTH PLATE, FOR RF CON
	RV1	PU52105	PLASTIC RIVET, X2
	SCW1	GPSF2608Z	TAPPING SCREW, X2
	SCW2	SDST2605Z	TAPPING SCREW
	SCW3	SDSF2608Z	TAPPING SCREW
	SPC1	PQM30029-10	SPACER
	TML1	PQ10630-3-5	TERMINAL BOARD
WR1	PW30401-AB20T	COAXIAL CORD	
	-VIDEO SECTION-		
	IC1	PB20187B	Y MODULE
△	IC4	MN3801	IC
	IC5	MN3106	IC
	IC6	PB20232A	Y MODULE
△	IC7	MSM6866RS	IC
	IC8	TC74HC86P	IC
	OR	UPD74HC86C	IC
	IC9	M51647SP	IC
	IC11	BA7021	IC
	IC301	PU22517D	C.MODULE BOARD ASSY

#△ REF NO. PART NO. PART NAME, DESCRIPTION

IC302 BA7233 IC
IC303 NJM2233AS IC

Q1 2SC1740S(QRS) TRANSISTOR
Q2 2SC1740S(R) TRANSISTOR
Q3 2SC1740S(R) TRANSISTOR
Q4 2SC1740S(R) TRANSISTOR
Q5 2SC1740S(R) TRANSISTOR
Q6 2SC1740S(R) TRANSISTOR
Q7 2SA933S(RS) TRANSISTOR
Q8 2SC1740S(QRS) TRANSISTOR
Q9 DTA124ES TRANSISTOR
Q10 DTC144ES TRANSISTOR

Q11 DTA124ES TRANSISTOR
Q12 2SC1740S(QRS) TRANSISTOR
Q13 2SA933S(RS) TRANSISTOR
Q14 2SC1740S(QRS) TRANSISTOR
Q15 2SC1740S(QRS) TRANSISTOR
Q16 2SC1740S(QRS) TRANSISTOR
Q17 2SA933S(RS) TRANSISTOR
Q18 2SC1740S(QRS) TRANSISTOR
Q19 2SC1740S(QRS) TRANSISTOR
Q20 2SC1740S(QRS) TRANSISTOR

Q102 2SA933S(RS) TRANSISTOR
Q103 2SA933S(RS) TRANSISTOR
Q104 2SB643S TRANSISTOR
Q105 2SB643S TRANSISTOR
Q106 2SA854S(R) TRANSISTOR
Q107 2SA933S(RS) TRANSISTOR
Q108 DTC144ES TRANSISTOR
Q109 2SC1740S(QRS) TRANSISTOR

Q118 2SA933S(RS) TRANSISTOR
Q119 DTA124ES TRANSISTOR

Q121 DTC144ES TRANSISTOR
Q122 DTA124ES TRANSISTOR
Q123 2SC1740S(QRS) TRANSISTOR
Q124 2SC1740S(QRS) TRANSISTOR
Q125 DTA124ES TRANSISTOR
Q126 DTC144ES TRANSISTOR
Q127 DTC144ES TRANSISTOR
Q128 DTA114TS TRANSISTOR
Q129 DTA124ES TRANSISTOR
Q130 DTA124ES TRANSISTOR

Q131 DTA124ES TRANSISTOR
Q132 DTA124ES TRANSISTOR
Q133 DTA124ES TRANSISTOR
Q134 2SC1740S(QRS) TRANSISTOR
Q135 2SA933S(RS) TRANSISTOR
Q136 2SA933S(RS) TRANSISTOR
Q137 DTC144ES TRANSISTOR
Q138 2SC3354(TS) TRANSISTOR
Q139 2SC1740S(S) TRANSISTOR
Q140 2SC1740S(Q) TRANSISTOR

Q141 2SC1740S(S) TRANSISTOR
Q142 2SC1740S(S) TRANSISTOR
Q143 2SC3354(TS) TRANSISTOR
Q144 DTC144ES TRANSISTOR
Q145 DTC144ES TRANSISTOR
Q146 2SC1740S(QRS) TRANSISTOR
Q147 2SC1740S(QRS) TRANSISTOR
Q148 2SC1740S(QRS) TRANSISTOR
Q149 2SA933S(RS) TRANSISTOR
Q150 2SC1740S(QRS) TRANSISTOR

Q151 DTA124ES TRANSISTOR
Q152 2SA854S(R) TRANSISTOR
Q153 DTA124ES TRANSISTOR
△ Q154 2SA854S(R) TRANSISTOR

#△ REF NO. PART NO. PART NAME, DESCRIPTION

Q155 DTC144ES TRANSISTOR
Q156 2SC3354 TRANSISTOR
Q157 DTC144ES TRANSISTOR
Q158 DTC144ES TRANSISTOR
Q159 2SC1740S(QRS) TRANSISTOR
Q160 DTA144ES TRANSISTOR

Q161 DTC144ES TRANSISTOR
Q164 DTC144ES TRANSISTOR

Q301 2SC1740S(QRS) TRANSISTOR
Q302 DTC144ES TRANSISTOR
Q303 2SC1740S(QRS) TRANSISTOR
Q304 DTC144WS TRANSISTOR
Q305 2SC3354(TS) TRANSISTOR
Q306 2SC1740S(QRS) TRANSISTOR
Q307 2SC3354(TS) TRANSISTOR
Q308 DTC144ES TRANSISTOR
Q309 2SC1740S(QRS) TRANSISTOR
Q310 2SC1740S(QRS) TRANSISTOR

D1 1SS133 DIODE
D2 1SS133 DIODE
D3 1SS133 DIODE
D4 1SS133 DIODE
D5 1SS133 DIODE
D6 1SS133 DIODE
D7 1SS133 DIODE
D8 1SS133 DIODE
D9 1SS133 DIODE

D101 1SS133 DIODE
D102 1SS133 DIODE
D103 1SS133 DIODE
D104 1SS133 DIODE
D105 1SS133 DIODE
D106 1SS133 DIODE
D108 1SS133 DIODE
D109 1SS133 DIODE
D110 1SS133 DIODE

D111 1SS133 DIODE
D112 1SS133 DIODE
D119 1SS133 DIODE
D120 1SS133 DIODE

D121 1SS133 DIODE
D122 1SS133 DIODE
D123 1SS133 DIODE
D124 1SS133 DIODE
D125 1SS133 DIODE
D126 1SS133 DIODE
D128 1SS133 DIODE
D129 1SS133 DIODE
D130 1SS133 DIODE

D131 1SS133 DIODE
D132 1SS133 DIODE
D133 1SS133 DIODE
D134 1SS133 DIODE
D135 1SS133 DIODE
D136 1SS133 DIODE
D137 1SS133 DIODE
D138 1SS133 DIODE
D139 1SS133 DIODE
D140 1SS133 DIODE

D141 1SS133 DIODE
D142 1SS133 DIODE
D143 1SS133 DIODE
D144 1SS133 DIODE
D145 1SS292 DIODE
D146 1SS133 DIODE
D147 1SS133 DIODE

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D148	0A90	DIODE
	D149	0A90	DIODE
	D150	RD9.1EB2	ZENER DIODE
	D151	1SS133	DIODE
	D152	1SS133	DIODE
	D153	1SS133	DIODE
	D154	1SS133	DIODE
	D155	1SS133	DIODE
	D156	1SS133	DIODE
	D157	1SS133	DIODE
	D158	1SS133	DIODE
	D159	1SS133	DIODE
	D160	1SS133	DIODE
	D161	1SS133	DIODE
	D162	1SS133	DIODE
	D163	1SS133	DIODE
	D164	1SS133	DIODE
	D165	1SS133	DIODE
	D302	1SS133	DIODE
	D304	1SS133	DIODE
	D306	1SS133	DIODE
	R1	QRD161J-223	RESISTOR
	R2	QRD161J-223	RESISTOR
	R3	QRD161J-182	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-123	RESISTOR
	R7	QRD161J-392	RESISTOR
	R8	QRD161J-361	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-561	RESISTOR
	R11	QRD161J-184	RESISTOR
	R12	QRD161J-152	RESISTOR
	R13	QRD161J-332	RESISTOR
	R14	QRD161J-472	RESISTOR
	R15	QRD161J-682	RESISTOR
	R16	QRD161J-223	RESISTOR
	R17	QRD161J-184	RESISTOR
	R18	QRD161J-102	RESISTOR
	R19	QRD161J-333	RESISTOR
	R23	QRD161J-223	RESISTOR
	R24	QRD161J-223	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-561	RESISTOR
	R27	QRD161J-122	RESISTOR
	R28	QVZ3518-222	V RESISTOR,S-SP FREQ RESPONSE
	OR	QVZ3523-222	V RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QVZ3518-102	V RESISTOR,S-EP FREQ RESPONSE
	OR	QVZ3523-182	V RESISTOR
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-273	RESISTOR
	R33	QRD161J-102	RESISTOR
	R34	QRD161J-561	RESISTOR
	R35	QRD161J-561	RESISTOR
	R36	QRD161J-821	RESISTOR
	R37	QRD161J-182	RESISTOR
	R38	QRD161J-223	RESISTOR
	R39	QRD161J-223	RESISTOR
	R40	QRD161J-471	RESISTOR
	R41	QRD161J-222	RESISTOR
	R42	QRD161J-102	RESISTOR
	R43	QRD161J-102	RESISTOR
	R44	QRD161J-271	RESISTOR
	R45	QRD161J-103	RESISTOR
	R46	QRD161J-273	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R47	QRD161J-102	RESISTOR
	R48	QRD161J-561	RESISTOR
	R49	QRD161J-821	RESISTOR
	R50	QRD161J-681	RESISTOR
	R51	QRD161J-561	RESISTOR
	R52	QRD161J-223	RESISTOR
	R53	QRD161J-153	RESISTOR
	R54	QRD161J-681	RESISTOR
	R55	QRD161J-392	RESISTOR
	R56	QRD161J-562	RESISTOR
	R57	QRD161J-223	RESISTOR
	R58	QRD161J-182	RESISTOR
	R59	QRD161J-472	RESISTOR
	R60	QRD161J-681	RESISTOR
	R101	QRD161J-273	RESISTOR
	R103	QRD161J-472	RESISTOR
	R105	QRD161J-104	RESISTOR
	R106	QRD161J-152	RESISTOR
	R107	QRD161J-102	RESISTOR
	R108	QRD161J-102	RESISTOR
	R109	QRD161J-102	RESISTOR
	R110	QRD121J-151	RESISTOR
	R111	QRD121J-271	RESISTOR
	R112	QRD121J-151	RESISTOR
	R113	QRD161J-750	RESISTOR
	R114	QRD161J-750	RESISTOR
	R115	QRD161J-750	RESISTOR
	R117	QRD161J-102	RESISTOR
	R118	QRD161J-102	RESISTOR
	R119	QRD161J-393	RESISTOR
	R120	QRD161J-472	RESISTOR
	R122	QRD161J-124	RESISTOR
	R123	QRD161J-222	RESISTOR
	R125	QRD161J-681	RESISTOR
	R126	QRD161J-103	RESISTOR
	R127	QRD161J-752	RESISTOR
	R128	QRD161J-222	RESISTOR
	R129	QRD161J-223	RESISTOR
	R130	QRD161J-333	RESISTOR
	R131	QRD161J-474	RESISTOR
	R157	QVZ3518-473	V RESISTOR,S-MODE PB Y LEVEL
	OR	QVZ3523-473	V RESISTOR
	R158	QRD161J-223	RESISTOR
	R159	QRD161J-241	RESISTOR
	R160	QVZ3518-151	V RESISTOR,PROCES INPUT LEVEL
	OR	QVZ3523-151	V RESISTOR
	R161	QRD161J-391	RESISTOR
	R162	QRD161J-152	RESISTOR
	R163	QRD161J-102	RESISTOR
	R165	QRD161J-103	RESISTOR
	R166	QRD161J-185	RESISTOR
	R168	QRD161J-750	RESISTOR
	R169	QRD161J-750	RESISTOR
	R171	QRD161J-101	RESISTOR
	R175	QRD161J-750	RESISTOR
	R176	QVZ3518-333	V RESISTOR,N-MODE PB Y LEVEL
	OR	QVZ3523-333	V RESISTOR
	R177	QRD161J-472	RESISTOR
	R179	QRD161J-102	RESISTOR
	R180	QVZ3518-102	V RESISTOR,S-MODE REC FM
	OR	QVZ3523-102	V RESISTOR
	R181	QRD161J-561	RESISTOR
	R182	QRD161J-153	RESISTOR
	R183	QRD161J-223	RESISTOR
	R184	QRD161J-681	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R185	QRD161J-223	RESISTOR
	R186	QRD161J-103	RESISTOR
	R187	QRD161J-561	RESISTOR
	R188	QVZ3518-102	V RESISTOR,N-MODE REC FM
	OR	QVZ3523-102	V RESISTOR
	R189	QRD161J-222	RESISTOR
	R190	QRD161J-821	RESISTOR
	R191	QRD161J-153	RESISTOR
	R192	QRD161J-273	RESISTOR
	R193	QRD161J-102	RESISTOR
	R194	QRD161J-272	RESISTOR
	R195	QRD161J-681	RESISTOR
	R196	QRD161J-392	RESISTOR
	R197	QRD161J-182	RESISTOR
	R198	QRD161J-104	RESISTOR
	R199	QRD161J-103	RESISTOR
	R200	QRD161J-103	RESISTOR
	R201	QRD161J-562	RESISTOR
	R203	QRD161J-152	RESISTOR
	R204	QVZ3518-333	V RESISTOR,E-E LEVEL
	OR	QVZ3523-333	V RESISTOR
	R205	QVZ3518-222A	V RESISTOR,YNR NC BALANCE
	OR	QVZ3523-222A	V RESISTOR
	R206	QRD161J-182	RESISTOR
	R207	QRD161J-102	RESISTOR
	R208	QRD161J-392	RESISTOR
	R209	QRD161J-102	RESISTOR
	R210	QRD161J-103	RESISTOR
	R211	QRD161J-334	RESISTOR
	R213	QRD161J-123	RESISTOR
	R214	QVZ3518-103	V RESISTOR,CCD BIAS
	OR	QVZ3523-103	V RESISTOR
	R215	QRD161J-123	RESISTOR
	R216	QRD161J-123	RESISTOR
	R217	QRD161J-223	RESISTOR
	R218	QRD161J-103	RESISTOR
	R219	QRD161J-103	RESISTOR
	R220	QRD161J-393	RESISTOR
	R221	QRD161J-561	RESISTOR
	R222	QRD161J-102	RESISTOR
	R223	QRD161J-333	RESISTOR
	R224	QRD161J-102	RESISTOR
	R225	QRD161J-102	RESISTOR
	R226	QRD161J-102	RESISTOR
	R227	QRD161J-102	RESISTOR
	R228	QRD161J-475	RESISTOR
	R229	QRD161J-472	RESISTOR
	R232	QRD161J-222	RESISTOR
	R233	QRD161J-562	RESISTOR
	R234	QRD161J-121	RESISTOR
	R235	QRD161J-223	RESISTOR
	R236	QRD161J-184	RESISTOR
	R237	QRD161J-271	RESISTOR
	R238	QRD161J-471	RESISTOR
	R239	QRD161J-391	RESISTOR
	R240	QRD161J-122	RESISTOR
	R241	QRD161J-471	RESISTOR
	R242	QRD161J-222	RESISTOR
	R243	QRD161J-472	RESISTOR
	R244	QRD161J-103	RESISTOR
	R245	QRD161J-682	RESISTOR
	R246	QVZ3518-471A	V RESISTOR,C COMB ADJ
	OR	QVZ3523-471A	V RESISTOR
	R247	QRD161J-152	RESISTOR
	R248	QRD161J-821	RESISTOR
	R249	QRD161J-105	RESISTOR
	R250	QRD161J-471	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R251	QVZ3518-102	V RESISTOR,Y COMB ADJ
	OR	QVZ3523-102	V RESISTOR
	R252	QRD161J-561	RESISTOR
	R253	ERS-A39J-561	THERMISTOR
	R254	QVZ3518-681	V RESISTOR,Y COMB ADJ
	OR	QVZ3523-681	V RESISTOR
	R255	QRD161J-102	RESISTOR
	R256	QRD161J-272	RESISTOR
	R257	QRD161J-272	RESISTOR
△	R258	QRD161J-181	RESISTOR
	R259	QRD161J-393	RESISTOR
	R260	QRD161J-272	RESISTOR
	R261	QRD161J-822	RESISTOR
	R262	QRD161J-104	RESISTOR
	R263	QRD161J-104	RESISTOR
	R264	QRD161J-103	RESISTOR
	R265	QRD161J-393	RESISTOR
	R266	QRD161J-272	RESISTOR
	R267	QRD161J-273	RESISTOR
	R268	QRD161J-103	RESISTOR
	R269	QRD161J-103	RESISTOR
	R270	QRD161J-563	RESISTOR
	R272	QRD161J-821	RESISTOR
	R273	QRD161J-471	RESISTOR
	R274	QRD161J-333	RESISTOR
	R275	QRD161J-333	RESISTOR
	R278	QRD161J-103	RESISTOR
	R279	QRD161J-273	RESISTOR
	R280	QRD161J-183	RESISTOR
	R281	QRD161J-103	RESISTOR
	R282	QRD161J-103	RESISTOR
	R284	QRD161J-333	RESISTOR
	R285	QRD161J-473	RESISTOR
	R286	QRD161J-682	RESISTOR
	R287	QRD161J-223	RESISTOR
	R288	QRD161J-393	RESISTOR
	R289	QRD161J-564	RESISTOR
	R291	QRD161J-221	RESISTOR
	R292	QRD161J-101	RESISTOR
	R294	QRD161J-102	RESISTOR
	R295	QRD161J-393	RESISTOR
	R296	QRD162J-332	RESISTOR
	R301	QRD161J-101	RESISTOR
	R302	QVZ3518-471AZ	V RESISTOR,CNR FB
	OR	QVZ3523-471AZ	V RESISTOR
	R303	QVZ3518-472AZ	V RESISTOR,CNR NC BALANCE
	OR	QVZ3523-472AZ	V RESISTOR
	R304	QRD161J-561	RESISTOR
	R305	QRD161J-561	RESISTOR
	R306	QRD161J-102	RESISTOR
	R307	QRD161J-562	RESISTOR
	R308	QRD161J-473	RESISTOR
	R309	QRD161J-473	RESISTOR
	R310	QRD161J-123	RESISTOR
	R311	QRD161J-223	RESISTOR
	R312	QRD161J-222	RESISTOR
	R313	QRD161J-152	RESISTOR
	R314	QVZ3518-222AZ	V RESISTOR,CNR INPUT LEVEL
	OR	QVZ3523-222AZ	V RESISTOR
	R315	QRD161J-103	RESISTOR
	R316	QRD161J-331	RESISTOR
	R317	QRD161J-182	RESISTOR
	R318	QRD161J-102	RESISTOR
	R319	QRD161J-332	RESISTOR
	R320	QRD161J-102	RESISTOR
	R321	QRD161J-102	RESISTOR
	R322	QRD161J-102	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
R323		QRD161J-561	RESISTOR
R324		QRD161J-471	RESISTOR
R325		QRD161J-222	RESISTOR
R326		QRD161J-102	RESISTOR
R327		QRD161J-152	RESISTOR
R328		QRD161J-102	RESISTOR
R329		QRD161J-102	RESISTOR
R332		QRD161J-333	RESISTOR
R333		QRD161J-332	RESISTOR
R334		QRD161J-273	RESISTOR
R335		QRD161J-123	RESISTOR
R336		QRD161J-102	RESISTOR
R337		QRD161J-682	RESISTOR
R338		QRD161J-103	RESISTOR
R339		QVZ3518-471	V RESISTOR, SP REC COLOR
OR		QVZ3523-471	V RESISTOR
R340		QRD161J-102	RESISTOR
R341		QVZ3518-471	V RESISTOR, EP REC COLOR
OR		QVZ3523-471	V RESISTOR
C1		QCVB1CN-103	CAPACITOR
C2		QETCOJM-476	E CAPACITOR
C3		QCVB1CN-103	CAPACITOR
C4		QCB81HJ-271	CAPACITOR
C5		QCSB1HK-6R8	CAPACITOR
C6		QCSB1HJ-150	CAPACITOR
C7		QCB81HJ-681	CAPACITOR
C8		QCVB1CN-103	CAPACITOR
C9		QETC1HM-105	E CAPACITOR
C10		QETC1EM-475	E CAPACITOR
C11		QCVB1CN-103	CAPACITOR
C12		QCSB1HJ-390	CAPACITOR
C13		QCSB1HJ-180	CAPACITOR
C14		QCVB1CN-103	CAPACITOR
C15		QCVB1CN-103	CAPACITOR
C16		QCSB1HJ-180	CAPACITOR
C17		QCSB1HJ-390	CAPACITOR
C18		QCSB1HJ-120	CAPACITOR
C19		QCSB1HJ-100	CAPACITOR
C20		QCVB1CN-103	CAPACITOR
C21		QCSB1HJ-390	CAPACITOR
C22		QCVB1CN-103	CAPACITOR
C24		QCSB1HJ-560	CAPACITOR
C25		QCVB1CN-103	CAPACITOR
C26		QCSB1HJ-330	CAPACITOR
C27		QCSB1HJ-120	CAPACITOR
C29		QCVB1CN-103	CAPACITOR
C30		QCVB1CN-103	CAPACITOR
C31		QCVB1CN-103	CAPACITOR
C32		QCB81HJ-820	CAPACITOR
C33		QCVB1CN-103	CAPACITOR
C34		QCSB1HJ-100	CAPACITOR
C101		QETCOJM-336	E CAPACITOR
C103		QETC1EM-475	E CAPACITOR
C104		QETC1CM-106	E CAPACITOR
C105		QCSB1HJ-150	CAPACITOR
C107		QETCOJM-477	E CAPACITOR
C108		QETCOJM-477	E CAPACITOR
C109		QCVB1CN-103	CAPACITOR
C110		QETC1CM-476	E CAPACITOR
C111		QCVB1CN-103	CAPACITOR
C112		QETC1CM-476	E CAPACITOR
C113		QETCOJM-336	E CAPACITOR
C114		QETC1CM-106	E CAPACITOR
C115		QCSB1HJ-150	CAPACITOR
C117		QCVB1CN-103	CAPACITOR
C118		QET61HM-335	E CAPACITOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
C119		QETC1HM-224	E CAPACITOR
C120		QETCOJM-476	E CAPACITOR
C121		QCVB1CN-103	CAPACITOR
C122		QETC1CM-106	E CAPACITOR
C123		QETC1CM-226	E CAPACITOR
C136		QETCOJM-337	E CAPACITOR
C137		QCVB1CN-103	CAPACITOR
C138		QCSB1HJ-120	CAPACITOR
C139		QETCOJM-476	E CAPACITOR
C140		QETC1CM-106	E CAPACITOR
C141		QCVB1CN-103	CAPACITOR
C142		QETCOJM-476	E CAPACITOR
C143		QETCOJM-476	E CAPACITOR
C144		QETC1EM-475	E CAPACITOR
C145		QETC1EM-475	E CAPACITOR
C146		QETC1EM-475	E CAPACITOR
C147		QCSB1HJ-560	CAPACITOR
C151		QCVB1CN-103	CAPACITOR
C154		QCVB1CN-103	CAPACITOR
C155		QETCOJM-476	E CAPACITOR
C156		QEN61HM-105	NP E CAPACITOR
C157		QETC1HM-105	E CAPACITOR
C158		QETC1HM-105	E CAPACITOR
C159		QCVB1CN-103	CAPACITOR
C160		QCVB1CN-103	CAPACITOR
C161		QETCOJM-476	E CAPACITOR
C162		QCB81HJ-820	CAPACITOR
C164		QCSB1HJ-220	CAPACITOR
C165		QETC1AM-226	E CAPACITOR
C166		QETC1HM-334	E CAPACITOR
C167		QETC1HM-105	E CAPACITOR
C169		QCVB1CN-103	CAPACITOR
C170		QCVB1CN-103	CAPACITOR
C171		QCVB1CN-103	CAPACITOR
C172		QCVB1CN-103	CAPACITOR
C173		QCSB1HJ-330	CAPACITOR
C174		QCVB1CN-103	CAPACITOR
C175		QETC1CM-476	E CAPACITOR
C176		QCB81HJ-151	CAPACITOR
C177		QCB81HJ-151	CAPACITOR
C178		QCSB1HJ-330	CAPACITOR
C179		QEN61HM-225	NP E CAPACITOR
C180		QCB81HJ-181	CAPACITOR
C181		QCVB1CN-103	CAPACITOR
C182		QCVB1CN-103	CAPACITOR
C183		QCVB1CN-103	CAPACITOR
C184		QETC1CM-106	E CAPACITOR
C185		QETC1HM-474	E CAPACITOR
C187		QETCOJM-336	NP E CAPACITOR
C188		QEK61EM-335	E CAPACITOR
C189		QFN31HJ-223	M CAPACITOR
C190		QCVB1CN-103	CAPACITOR
C191		QETCOJM-107	E CAPACITOR
C192		QETC1EM-475	E CAPACITOR
C193		QCSB1HJ-330	CAPACITOR
C195		QEK60JM-476	E CAPACITOR
C196		QCVB1CN-103	CAPACITOR
C198		QCVB1CN-103	CAPACITOR
C199		QCB81HJ-102	CAPACITOR
C200		QCVB1CN-103	CAPACITOR
C201		QEK61HM-105	E CAPACITOR
C202		QCVB1CN-103	CAPACITOR
C203		QEK61EM-475	E CAPACITOR
C204		QCVB1CN-103	CAPACITOR
C205		QCVB1CN-103	CAPACITOR

#△ REF NO. PART NO. PART NAME, DESCRIPTION

C206	QCB81HJ-151	CAPACITOR
C207	QEK51HM-104	E CAPACITOR
C208	QCVB1CN-103	CAPACITOR
C210	QCC31CJ-472	CAPACITOR
C211	QEK61HM-225	E CAPACITOR
C212	QCB81HJ-102	CAPACITOR
C213	QETC0JM-107	E CAPACITOR
C215	QCVB1CN-103	CAPACITOR
C216	QEK60JM-476	E CAPACITOR
C217	QCB81HJ-102	CAPACITOR
C218	QEK61EM-475	E CAPACITOR
C219	QET61CM-227	E CAPACITOR
C220	QCVB1CN-103	CAPACITOR
C221	QETC1CM-106	E CAPACITOR
C222	QETC1HM-105	E CAPACITOR
C223	QETC0JM-476	E CAPACITOR
C224	QCVB1CN-103	CAPACITOR
C225	QCT25RH-200	CAPACITOR
OR	QCT05RH-200	CAPACITOR
C226	QCT05TH-470	CAPACITOR
C227	QCT05TH-390	CAPACITOR
C228	QCVB1CN-103	CAPACITOR
C229	QCT25RH-390	CAPACITOR
OR	QCT05RH-390	CAPACITOR
C230	QCB81HJ-101	CAPACITOR
C231	QEK61EM-475	E CAPACITOR
C232	QEK60JM-476	E CAPACITOR
C233	QCB81HJ-102	CAPACITOR
C234	QCB81HJ-102	CAPACITOR
C235	QCVB1CN-103	CAPACITOR
C236	QCB81HJ-102	CAPACITOR
C237	QEK61AM-476	E CAPACITOR
C238	QCVB1CN-103	CAPACITOR
C239	QEN61HM-105	NP E CAPACITOR
C240	QCVB1CN-103	CAPACITOR
C241	QCVB1CN-103	CAPACITOR
C242	QCVB1CN-103	CAPACITOR
C243	QCVB1CN-103	CAPACITOR
C246	QCB81HJ-101	CAPACITOR
C247	QCVB1CN-103	CAPACITOR
C248	QCSB1HJ-180	CAPACITOR
C249	QCVB1CN-103	CAPACITOR
C250	QETC1CM-106	E CAPACITOR
C251	QETC1CM-106	E CAPACITOR
C252	QETC1AM-226	E CAPACITOR
C253	QFN31HJ-683	M CAPACITOR
C254	QETC0JM-476	E CAPACITOR
C255	QETC1EM-475	E CAPACITOR
C256	QEN61EM-475	NP E CAPACITOR
C257	QCVB1CN-103	CAPACITOR
C258	QCVB1CN-103	CAPACITOR
C259	QFN41HJ-223	M CAPACITOR
C260	QCB81HJ-471	CAPACITOR
C261	QETC1CM-106	E CAPACITOR
C262	QCSB1HJ-200	CAPACITOR
C263	QCB81HJ-102	CAPACITOR
C264	QCB81HJ-102	CAPACITOR
C265	QCVB1CN-103	CAPACITOR
C266	QCB81HJ-181	CAPACITOR
C267	QEN50JM-336	NP E CAPACITOR
C268	QCB81HJ-102	CAPACITOR
C269	QCB81HJ-102	CAPACITOR
C270	QCS11HJ-560	CAPACITOR
C272	QER40JM-107	E CAPACITOR
C301	QETC1HM-105	E CAPACITOR

#△ REF NO. PART NO. PART NAME, DESCRIPTION

C302	QCVB1CN-103	CAPACITOR
C303	QCT25CH-101	CAPACITOR
C304	QCVB1CN-103	CAPACITOR
C305	QCVB1CN-103	CAPACITOR
C306	QCVB1CN-103	CAPACITOR
C307	QETC1CM-106	E CAPACITOR
C308	QCVB1CN-103	CAPACITOR
C309	QCVB1CN-103	CAPACITOR
C310	QCB81HJ-121	CAPACITOR
C311	QETC0JM-476	E CAPACITOR
C314	QETC0JM-476	E CAPACITOR
C315	QCVB1CN-103	CAPACITOR
C316	QCVB1CN-103	CAPACITOR
C317	QCB81HJ-331	CAPACITOR
C318	QCB81HJ-820	CAPACITOR
C319	QCSB1HJ-270	CAPACITOR
C320	QCSB1HJ-150	CAPACITOR
C321	QEN61HM-474	NP E CAPACITOR
C322	QCVB1CN-103	CAPACITOR
C323	QETC0JM-337	E CAPACITOR
C324	QETC1EM-475	E CAPACITOR
C325	QETC1HM-224	E CAPACITOR
C326	QETC1HM-104	E CAPACITOR
C328	QCVB1CN-103	CAPACITOR
C330	QETC0JM-337	E CAPACITOR
C331	QETC1EM-335	E CAPACITOR
C332	QFN31HJ-562	M CAPACITOR
C333	QCVB1CN-103	CAPACITOR
C334	QCSB1HJ-560	CAPACITOR
C335	QETC1HM-474	E CAPACITOR
C336	QCVB1CN-103	CAPACITOR
C337	QCVB1CN-103	CAPACITOR
C338	QCVB1CN-103	CAPACITOR
C339	QCB81HJ-471	CAPACITOR
C340	QCVB1CN-103	CAPACITOR
C341	QCVB1CN-103	CAPACITOR
C342	QCC31CJ-473	CAPACITOR
C343	QFN31HJ-103	M CAPACITOR
C344	QFN31HJ-104	M CAPACITOR
L1	PU59152-8R2J	PEAKING COIL
L2	PU48530-101K	PEAKING COIL
L3	PU59152-121J	PEAKING COIL
L4	PU59152-120J	PEAKING COIL
L5	PU59152-560J	PEAKING COIL
L6	PU59152-390J	PEAKING COIL
L7	PU59152-221J	PEAKING COIL
L8	PU59152-100J	PEAKING COIL
L9	PU59152-470J	PEAKING COIL
L10	PU59152-180J	PEAKING COIL
L11	PU59152-470J	PEAKING COIL
L12	PU59152-220J	PEAKING COIL
L101	PU59152-820J	PEAKING COIL
L102	PU48530-101K	PEAKING COIL
L103	PU48530-101K	PEAKING COIL
L104	PU48530-101K	PEAKING COIL
L105	PU48530-101K	PEAKING COIL
L106	PU48530-181J	PEAKING COIL
L107	PU59152-680J	PEAKING COIL
L108	PU48530-471K	PEAKING COIL
L109	PU48530-560J	PEAKING COIL
L110	PU59152-101J	PEAKING COIL
L117	PU48530-101K	PEAKING COIL
L118	PU48530-101K	PEAKING COIL
L119	PU59152-121J	PEAKING COIL
L120	PU59152-820J	PEAKING COIL

#	REF NO.	PART NO.	PART NAME, DESCRIPTION	#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L121	PU59152-330J	PEAKING COIL		CN6	PU60417-5	CAP HOUSING
	L122	PU48530-101K	PEAKING COIL		CN7	PU60417-6	CAP HOUSING
	L123	PU48530-471J	PEAKING COIL		CN8	PU58844-4	CAP HOUSING
	L124	PU59152-470J	PEAKING COIL		CN9	PU58844-3	CAP HOUSING
	L125	PU59152-680J	PEAKING COIL				
	L127	PU59152-680J	PEAKING COIL		CN11	PU58844-4	CAP HOUSING
	L128	PU48530-101K	PEAKING COIL		CN13	PU58844-2	CAP HOUSING
	L129	PU48530-101K	PEAKING COIL		CN14	PU58844-2	CAP HOUSING
	L130	PU48530-1R0K	PEAKING COIL				
	L131	PU59153-101K	PEAKING COIL				
	L132	PU48530-1R2K	PEAKING COIL				
	L133	PU59152-101J	PEAKING COIL				
	L134	PU59152-270J	PEAKING COIL				
	L135	PU53223-1R0H	PEAKING COIL				
	L136	PU53223-1R0H	PEAKING COIL				
	L137	PU59152-R22K	PEAKING COIL				
	L138	PU59152-101J	PEAKING COIL				
	L139	PU53223-1R0G	PEAKING COIL				
	L140	PU53223-1R0G	PEAKING COIL				
	L301	PU59152-150J	PEAKING COIL				
	L302	PU48530-271J	PEAKING COIL				
	L303	PU58308-822J	COIL				
	L306	PU48530-101K	PEAKING COIL				
	L307	PU48530-101K	PEAKING COIL				
	L308	PU59153-101K	PEAKING COIL				
	L309	PU60165-120G	COIL				
	L310	PU48530-471J	PEAKING COIL				
	L311	PU59152-820J	PEAKING COIL				
	L312	PU48530-102J	PEAKING COIL				
	L313	PU48530-222J	PEAKING COIL				
	EQ101	PU60429	EQUALIZER				
	EQ102	PU60099	EQUALIZER				
	EQ301	PU60100	EQUALIZER				
	EQ302	PU60101	EQUALIZER				
	LPF101	PU60054-2	LOW PASS FILTER				
	OR	PU60054-3	LOW PASS FILTER				
	LPF102	PU60055	LOW PASS FILTER				
	LPF103	PU60097-2	LOW PASS FILTER				
	LPF104	PU60179	LOW PASS FILTER				
	LPF301	PU60430-2	LOW PASS FILTER				
	BPF301	PU60098	BAND PASS FILTER				
	CF301	PU58852	CERAMIC FILTER				
	DL301	PU58294	DELAY LINE				
	DL302	PU60227	1H DELAY LINE				
	X301	PU60323	CRYSTAL RESONATOR				
	T301	PU60057-2	TANK FILTER				
	OR	PU60057-3	TANK FILTER				
	T302	PU58295	COIL,CNR NC BALANCE				
	CP1	ICP-N10	CIRCUIT PROTECTOR				
	SLD1	PU36469	SHIELD CASE				
	SLD2	PU60657	SHIELD COVER				
	SLD3	PU60658	SHIELD PLATE				
	SLD4	PU60671	SHIELD CASE				
	SLD5	PU60672	SHIELD COVER				
	SLD6	PU60673	SHIELD PLATE				
	TP6	PU57545	TEST PIN,X25				
	CN1	PU58844-8	CAP HOUSING				
	CN2	PU58844-4	CAP HOUSING				
	CN4	PU60417-6	CAP HOUSING				
	CN5	PU58844-2	CAP HOUSING				

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	CN6	PU60417-5	CAP HOUSING
	CN7	PU60417-6	CAP HOUSING
	CN8	PU58844-4	CAP HOUSING
	CN9	PU58844-3	CAP HOUSING
	CN11	PU58844-4	CAP HOUSING
	CN13	PU58844-2	CAP HOUSING
	CN14	PU58844-2	CAP HOUSING

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D469	1SS133	DIODE
	OR	MA165	DIODE
	D470	1SS133	DIODE
	OR	MA165	DIODE
	R401	QRD161J-102	RESISTOR
	R402	QRD161J-103	RESISTOR
	R403	QRD161J-823	RESISTOR
	R406	QRD161J-222	RESISTOR
	R407	QRD161J-393	RESISTOR
	R408	QVZ3518-474AZ	V RESISTOR, EP2XNOR TK
	OR	QVZ3523-474AZ	V RESISTOR, EP2XNOR TK
	R409	QRD161J-274	RESISTOR
	R410	QRD161J-124	RESISTOR
	R411	QRD161J-823	RESISTOR
	R413	QRD161J-103	RESISTOR
	R421	QRD161J-102	RESISTOR
	R422	QRD161J-155	RESISTOR
	R424	QRD161J-223	RESISTOR
	R425	QRD161J-105	RESISTOR
	R426	QRD161J-102	RESISTOR
	R427	QRD161J-332	RESISTOR
	R428	QRD161J-222	RESISTOR
	R429	QRD161J-563	RESISTOR
	R430	QRD161J-105	RESISTOR
	R431	QRD161J-123	RESISTOR
	R432	QRD161J-223	RESISTOR
	R433	QRD161J-392	RESISTOR
	R434	QRD161J-473	RESISTOR
	R435	QRD161J-105	RESISTOR
	R436	QRD161J-105	RESISTOR
	R437	QRD161J-105	RESISTOR
	R438	QRD161J-393	RESISTOR
	R439	QRD161J-273	RESISTOR
	R440	QRD161J-475	RESISTOR
	R441	QRD161J-474	RESISTOR
	R443	QRD161J-102	RESISTOR
	R444	QRD161J-104	RESISTOR
	R445	QVZ3518-474AZ	V RESISTOR, SP SW POINT
	OR	QVZ3523-474AZ	V RESISTOR, SP SW POINT
	R456	QRD161J-682	RESISTOR
	R457	QRD161J-102	RESISTOR
	R458	QRD161J-474	RESISTOR
	R461	QRD161J-103	RESISTOR
	R463	QRD161J-183	RESISTOR
	R464	QRD161J-154	RESISTOR
	R465	QRD161J-104	RESISTOR
	R466	QRD161J-684	RESISTOR
	R467	QRD161J-564	RESISTOR
	R468	QRD161J-104	RESISTOR
	R469	QVZ3518-105AZ	V RESISTOR, EP SLOW TK PRE-SET
	OR	QVZ3518-105	V RESISTOR, EP SLOW TK PRE-SET
	R470	QRD161J-334	RESISTOR
	R471	QRD161J-564	RESISTOR
	R472	QVZ3518-105AZ	V RESISTOR, SP SLOW TK PRE-SET
	OR	QVZ3518-105	V RESISTOR, SP SLOW TK PRE-SET
	R473	QRD161J-394	RESISTOR
	R474	QRD161J-104	RESISTOR
	R475	QRD161J-103	RESISTOR
	R476	QRD161J-472	RESISTOR
	R478	QRD161J-153	RESISTOR
	R479	QRD161J-823	RESISTOR
	R480	QRD161J-153	RESISTOR
	R481	QRD161J-273	RESISTOR
	R482	QRD161J-153	RESISTOR
	R483	QRD161J-562	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R484	QRD161J-103	RESISTOR
	R485	QRD161J-123	RESISTOR
	R486	QRD161J-822	RESISTOR
	R488	QRD161J-103	RESISTOR
	R493	QRD161J-103	RESISTOR
	R494	QRD161J-103	RESISTOR
	R495	QRD161J-822	RESISTOR
	R601	QRD161J-472	RESISTOR
	R602	QRD161J-472	RESISTOR
	R603	QRD161J-333	RESISTOR
	C401	QFN31HJ-124	M CAPACITOR
	C402	QCC31CK-332	CAPACITOR
	C403	QCB81HJ-102	CAPACITOR
	C404	QFN31HK-563	M CAPACITOR
	C405	QCC31CK-473	CAPACITOR
	C421	QCF31HP-102	CAPACITOR
	C422	QETCIAM-226	E CAPACITOR
	C423	QETCIAM-226	E CAPACITOR
	C424	QCS31HJ-100	CAPACITOR
	C426	QCX81CN-272	CAPACITOR
	C427	QEK61HM-105	E CAPACITOR
	C428	QCC31CK-223	CAPACITOR
	C429	QCB81HJ-331	CAPACITOR
	C430	QCB81HJ-102	CAPACITOR
	C432	QETCIAM-226	E CAPACITOR
	C433	QCF31HP-102	CAPACITOR
	C434	QCC31CK-682	CAPACITOR
	C435	QFV71HJ-334	M CAPACITOR
	C436	QETCIEM-475	E CAPACITOR
	C437	QETCIEM-475	E CAPACITOR
	C438	QETCIEM-106	E CAPACITOR
	C439	QETCIEM-106	E CAPACITOR
	C440	QFV71HJ-184	M CAPACITOR
	C441	QCC31CK-183	CAPACITOR
	C442	QCS31HJ-101	CAPACITOR
	C443	QFN31HJ-682	M CAPACITOR
	C444	QEK61HM-105	E CAPACITOR
	C463	QCC31CK-104	CAPACITOR
	C464	QCC31CK-104	CAPACITOR
	C465	QCC31CK-393	CAPACITOR
	C466	QCC31CK-393	CAPACITOR
	C469	QCB81HJ-121	CAPACITOR
	C470	QFV71HJ-394	M CAPACITOR
	C471	QCF31HP-102	CAPACITOR
	C472	QCB81HJ-101	CAPACITOR
	C473	QCB81HJ-101	CAPACITOR
	TP401	PU57545	TEST PIN, X4(401-403.411)
	CN401	PU58844-3	CAP HOUSING
	CN402	PU58844-4	CAP HOUSING
	CN403	PU58844-5	CAP HOUSING
	CN404	PU60417-9	CAP HOUSING
	CN405	PU58844-7	CAP HOUSING
	CN406	PU58844-2	CAP HOUSING
-REGULATOR SECTION-			
	Q801	2SD1796	TRANSISTOR
△	Q802	2SC3311A	TRANSISTOR
△	OR	2SC1740S(QRS)	TRANSISTOR
	Q803	2SD1796	TRANSISTOR
	Q804	2SC3311A	TRANSISTOR
	OR	2SC1740S(QRS)	TRANSISTOR
	Q805	DTC144WS	TRANSISTOR
	Q806	DTA143XS	TRANSISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q807	DTB123ES	TRANSISTOR
	D801	RD6.2ES-T1B1	ZENER DIODE
	D802	1SS133	DIODE
		OR MA165	DIODE
	D803	1SS133	DIODE
		OR MA165	DIODE
	R801	QRD161J-472	RESISTOR
	R802	QRD161J-102	RESISTOR
	R803	QRD161J-222	RESISTOR
	R804	QRD161J-272	RESISTOR
	R805	QRD161J-122	RESISTOR
	R806	QRD161J-472	RESISTOR
	R807	QRD161J-471	RESISTOR
	R808	QRD161J-561	RESISTOR
	R809	QVZ3518-221	V RESISTOR,+5V ADJ
		OR QVZ3523-221	V RESISTOR,+5V ADJ
	R810	QRD161J-122	RESISTOR
	R811	QRD161J-103	RESISTOR
	C801	QETC1CM-476	E CAPACITOR
	C802	QCF31HP-103	CAPACITOR
	C803	QETC0JM-476	E CAPACITOR
	C804	QETC0JM-476	E CAPACITOR
	C805	QCF31HP-103	CAPACITOR
	C806	QCF31HP-103	CAPACITOR
	HS1	PQ32371	HEAT SINK
	SCW1	SDSB3010Z	SCREW, X2
	SCW2	SDSB3008Z	TAPPING SCREW, X2
	TP801	PU57545	TEST PIN, X3 (801-803)
	CN3	PU58844-2	CAP HOUSING
	CN10	PU58844-8	CAP HOUSING
	CN12	PU58844-2	CAP HOUSING
-TERMINAL BOARD ASSEMBLY<06>-			
	PWBA2	PB10114B2-01	TERMINAL BOARD ASSY <06>
	D901	1SS133	DIODE
	D902	1SS133	DIODE
	R901	QRD161J-102	RESISTOR
	R902	QRD161J-102	RESISTOR
	R903	QRD161J-102	RESISTOR
	R904	QRD161J-102	RESISTOR
	CN901	PU58844-3	CAP HOUSING
	CN902	PU58844-3	CAP HOUSING
-ON SCREEN SWITCHER SECTION-			
	IC2	TC74HC4066P	IC
	IC3	LA7220	IC
	Q110	2SA933S(RS)	TRANSISTOR
	Q111	2SC1740S(QRS)	TRANSISTOR
	Q112	2SC1740S(QRS)	TRANSISTOR
	Q113	2SA933S(RS)	TRANSISTOR
	Q114	2SA933S(RS)	TRANSISTOR
	Q115	2SC1740S(QRS)	TRANSISTOR
	D117	1SS133	DIODE
	D118	1SS133	DIODE
	R133	QRD161J-182	RESISTOR
	R134	QRD161J-182	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R135	QRD161J-102	RESISTOR
	R136	QRD161J-332	RESISTOR
	R137	QRD161J-222	RESISTOR
	R138	QRD161J-222	RESISTOR
	R139	QRD161J-152	RESISTOR
	R140	QRD161J-471	RESISTOR
	R141	QRD161J-182	RESISTOR
	R142	QRD161J-472	RESISTOR
	R143	QRD161J-102	RESISTOR
	R144	QRD161J-472	RESISTOR
	R145	QRD161J-102	RESISTOR
	C124	QCVB1CN-103	CAPACITOR
	C125	QCVB1CN-103	CAPACITOR
	C126	QETC0JM-476	E CAPACITOR
	C127	QETC1CM-476	E CAPACITOR
	C128	QCSB1HJ-560	CAPACITOR
	C129	QETC1EM-475	E CAPACITOR
	C130	QCSB1HJ-200	CAPACITOR
	C131	QCSB1HJ-200	CAPACITOR
	C132	QETC1CM-106	E CAPACITOR
	C133	QETC1CM-106	E CAPACITOR
	C134	QETC0JM-476	E CAPACITOR
	C135	QCVB1CN-103	CAPACITOR
	C148	QETC1CM-106	E CAPACITOR
	C149	QCVB1CN-103	CAPACITOR
	C150	QETC1CM-106	E CAPACITOR
	C271	QCVB1CN-103	CAPACITOR
	L111	PU48530-101K	PEAKING COIL
	L112	PU48530-101K	PEAKING COIL
	L113	PU48530-101K	PEAKING COIL
	L114	PU48530-101K	PEAKING COIL
	L115	PU59152-101J	PEAKING COIL
	CN15	PU58844-7	CAP HOUSING

* 7. MECHACON BOARD ASSEMBLY <04> *

	PWBA1	PB20213C-02	MECHACON BOARD ASSY
	IC1	M50938-621SP	IC
		OR M50938E-809SP	IC
△	IC2	TA8405S	IC
	IC3	M54647L	IC
	IC4	BA6222	IC
△	Q1	2SC1740S(RS)	TRANSISTOR
△	D1	HZS4.3EB2	ZENER DIODE
	D2	MA165	DIODE
		OR 1SS133	DIODE
	D3	MA165	DIODE
		OR 1SS133	DIODE
	D4	MA165	DIODE
		OR 1SS133	DIODE
	D5	HZS7.5EB2	ZENER DIODE
		OR MTZ7.5B	ZENER DIODE
	D6	MA165	DIODE
		OR 1SS133	DIODE
	D7	MA165	DIODE
		OR 1SS133	DIODE
	D10	MA165	DIODE
		OR 1SS133	DIODE
	R1	QRD161J-152	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
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R2	QRD161J-103	RESISTOR
R3	QRD161J-103	RESISTOR
R4	QRD161J-332	RESISTOR
R5	QRD161J-122	RESISTOR
R6	QRD161J-823	RESISTOR
R7	QRD161J-102	RESISTOR
R8	QRD161J-102	RESISTOR
R9	QRD161J-102	RESISTOR
R10	QRD161J-333	RESISTOR

R11	QRD161J-472	RESISTOR
R12	QRD161J-103	RESISTOR
R13	QRD161J-105	RESISTOR
R14	QRD161J-472	RESISTOR
R15	QRD161J-472	RESISTOR
R16	QRD161J-472	RESISTOR
R17	QRD161J-472	RESISTOR
R18	QRD161J-472	RESISTOR
R19	QRD161J-472	RESISTOR
R20	QRD161J-472	RESISTOR

R21	QRD161J-472	RESISTOR
R22	QRD161J-472	RESISTOR
R23	QRD161J-472	RESISTOR
R24	QRD161J-472	RESISTOR
R25	QRD161J-472	RESISTOR
R26	QRD161J-472	RESISTOR
R27	QRD161J-472	RESISTOR
R28	QRD161J-472	RESISTOR
R29	QRD161J-331	RESISTOR
R30	QRD161J-822	RESISTOR

R31	QRD161J-103	RESISTOR
R32	QRD161J-124	RESISTOR
R33	QRD161J-473	RESISTOR
R34	QRD161J-333	RESISTOR
R35	QRD161J-333	RESISTOR
R36	QRD161J-331	RESISTOR
R37	QRD161J-103	RESISTOR
R38	QRD161J-103	RESISTOR
R39	QRD161J-103	RESISTOR
R40	QRD161J-561	RESISTOR

R41	QRD161J-561	RESISTOR
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RA1	QRB045J-472XC	RESISTOR ARRAY
RA2	QRB045J-103XC	RESISTOR ARRAY

C1	QCF31HP-223	CAPACITOR
C2	QETC1EM-335	E CAPACITOR
C3	QCF31HP-223	CAPACITOR
C5	QETC1HM-105	E CAPACITOR
C6	QETC1HM-105	E CAPACITOR
C7	QETC1EM-106	E CAPACITOR
C8	QETC1CM-106	E CAPACITOR
C9	QCF31HP-223	CAPACITOR

L1	PU59152-100J	PEAKING COIL
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△ CF1	PU60125	RESONATOR
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TH1	ERT-D2FHJ503S	THERMISTOR
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△ HS1	PU60158-1-2	HEAT SINK
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SCW1	SBSE3006Z	TAPPING SCREW, X2
SCW2	SBSE3008Z	TAPPING SCREW

WR1	PW30112-J0AF6AH	PARALLEL WIRE
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CN1	PU59934-17	WIRE HOLDER
CN2	PU58844-6	CAP HOUSING
CN3	PU58844-7	CAP HOUSING
CN4	PU60417-9	CAP HOUSING

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
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CN5	PU60417-6	CAP HOUSING
CN6	PU60417-5	CAP HOUSING
CN7	PU60417-8	CAP HOUSING
CN8	PU58844-4	CAP HOUSING
CN9	PU60417-5	CAP HOUSING
CN10	PU58844-4	CAP HOUSING

CN11	PU58844-2	CAP HOUSING
CN12	PU60417-6	CAP HOUSING
CN13	PU58844-2	CAP HOUSING

△ CP1	ICP-N15	CIRCUIT PROTECTOR
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 * 8. IF BOARD ASSEMBLY <07> *

PWBA	PB10087B	IF BOARD ASSY
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JP1	PU59935-16	TERMINAL
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B3,R70	NRD718J-0RONYU	RESISTOR
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△ IC1	M51365SP	IC
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Q1	2SC3354	TRANSISTOR
Q2	2SC3354	TRANSISTOR
△ Q3	2SC1317(RS)	TRANSISTOR
Q4	2SC536SPA(FG)	TRANSISTOR
	OR 2SC3311A(RS)	TRANSISTOR
Q5	2SC536SPA(G)	TRANSISTOR
	OR 2SC3311A(S)	TRANSISTOR
Q6	2SA1309S	TRANSISTOR
Q7	2SC536SPA(G)	TRANSISTOR
	OR 2SC3311A(S)	TRANSISTOR
Q10	2SC3354	TRANSISTOR

D1	MTZ10D	ZENER DIODE
D6	1SS133	DIODE
D7	1SS133	DIODE
D8	1SS133	DIODE

R3	NRD718J-331NBU	RESISTOR
R4	NRD718J-472NBU	RESISTOR
R5	NRD718J-151NBU	RESISTOR
R6	NRD718J-102NBU	RESISTOR
R7	NRD718J-471NBU	RESISTOR
R8	NRD718J-561NYU	RESISTOR
R9	NRD718J-331NBU	RESISTOR
R10	NRD718J-470NBU	RESISTOR

R11	NRD718J-220NBU	RESISTOR
R17	NRD718J-562NBU	RESISTOR
R18	NRD718J-332NBU	RESISTOR
R19	NRD718J-222NBU	RESISTOR
R20	NRD718J-222NBU	RESISTOR

R21	QVZ3518-472	V RESISTOR, RF AGC
R22	NRD718J-824NBU	RESISTOR
R24	NRD718J-102NBU	RESISTOR
R25	NRD718J-821NBU	RESISTOR
R26	NRD718J-104NBU	RESISTOR
R27	NRD718J-104NBU	RESISTOR
R28	NRD718J-104NBU	RESISTOR

R31	NRD718J-222NBU	RESISTOR
R33	NRD718J-223NBU	RESISTOR
R34	NRD718J-470NBU	RESISTOR
R35	NRD718J-561NBU	RESISTOR
R36	NRD718J-561NBU	RESISTOR

#	REF NO.	PART NO.	PART NAME, DESCRIPTION	#	REF NO.	PART NO.	PART NAME, DESCRIPTION
R37		NRD718J-391NBU	RESISTOR	L4		PU54223-180K	PEAKING COIL
R38		NRD718J-152NBU	RESISTOR	L5		PU54223-270J	PEAKING COIL
R39		NRD718J-152NBU	RESISTOR	L6		PU54223-470J	PEAKING COIL
R40		QVZ3518-682	V RESISTOR, COLOR LEVEL	CF1		PU58558-2	CERAMIC FILTER, 4.5MHZ
R41		NRD718J-471NBU	RESISTOR	CF3		PU59039	CERAMIC FILTER, 4.5MHZ
R45		NRD718J-471NBU	RESISTOR	SAW1		PU36386-3	SAW FILTER
R46		NRD718J-104NBU	RESISTOR	T1		PU60042-2	COIL, 41.25MHZ
R47		NRD718J-103NBU	RESISTOR	T2		PU60027-01-01	IF TRANSFORMER, VCO 45.75MHZ
R48		NRD718J-562NBU	RESISTOR	T3		PU60028	IF TRANSFORMER, AFC 45.75MHZ
R49		NRD718J-103NBU	RESISTOR	T4		PU60104	IF TRANSFORMER, DET 4.5MHZ
R50		NRD718J-471NBU	RESISTOR	T5		PU55184	IF TRANSFORMER, S DET 15.74MHZ
R51		NRD718J-223NBU	RESISTOR	T6		PU60548	COIL, SIF 41.25MHZ
R52		NRD718J-223NBU	RESISTOR	T7		PU60258-2	COIL, SIF 41.25MHZ
R53		NRD718J-103NBU	RESISTOR	T8		PU60264	COIL (2FH), TRAP
R54		NRD718J-562NBU	RESISTOR	*****			
R57		NRD718J-123NBU	RESISTOR	*****			
R60		NRD718J-680NBU	RESISTOR	*****			
R61		NRD718J-331NBU	RESISTOR	*****			
R62		NRD718J-472NBU	RESISTOR	*****			
R63		NRD718J-101NBU	RESISTOR	*****			
R64		NRD718J-561NBU	RESISTOR	*****			
R65		NRD718J-151NBU	RESISTOR	*****			
R66		NRD718J-470NYU	RESISTOR	*****			
R71		QRD161J-271	RESISTOR	*****			
C2		NCT02CH-3R3NBR	CAPACITOR	PWBA		PB10106G-01	TUNER CTL BOARD ASSY
C3		QCT25CH-750	CAPACITOR	Δ TNR1		PU36419-2	TUNER
C4		NCT02CH-3R3NBR	CAPACITOR	IC1		TD6358P	IC
C5		NCB71HK-102NBR	CAPACITOR	Q1		2SC3311A(S)	TRANSISTOR
C6		NCB71HK-102NBR	CAPACITOR			OR 2SC1740S(S)	TRANSISTOR
C7		NCB71HK-102NBR	CAPACITOR	Q3		2SC1317(S)	TRANSISTOR
C8		NCB71HK-102NBR	CAPACITOR	Q5		2SA933S(RS)	TRANSISTOR
C9		NCB71HK-102NBR	CAPACITOR			OR 2SA1309R,S	TRANSISTOR
C10		QETC1CM-336	E CAPACITOR	Q6		2SA933S(RS)	TRANSISTOR
C11		NCY71CM-103NBR	CAPACITOR			OR 2SA1309R,S	TRANSISTOR
C13		NCY71CM-103NBR	CAPACITOR	Q7		2SA933S(RS)	TRANSISTOR
C14		PU57601-474MEZ	E CAPACITOR			OR 2SA1309R,S	TRANSISTOR
C15		QETC1CM-336	E CAPACITOR	Q8		2SA933S(RS)	TRANSISTOR
C16		NCF71EZ-223NBR	CAPACITOR			OR 2SA1309R,S	TRANSISTOR
C17		NCF71EZ-223NBR	CAPACITOR	Q13		2SC3399	TRANSISTOR
C18		QFV71HJ-104	M CAPACITOR			OR DTC144ES	TRANSISTOR
C19		NCB71HK-102NBR	CAPACITOR	D1		HZ30-2L	ZENER DIODE
C20		NCY71CM-103NBR	CAPACITOR	D2		E-452-2-T2	DIODE
C21		NCB71HK-101NBR	CAPACITOR	D4		1SS136	DIODE
C22		QETC1HM-105	E CAPACITOR	D5		1SS133	DIODE
C24		QETC1HM-105	E CAPACITOR	R1		NRD718J-333NBU	RESISTOR
C25		NCB71HK-102NBR	CAPACITOR	R2		NRD718J-153NBU	RESISTOR
C26		QFN31HJ-123	M CAPACITOR	R3		NRD718J-121NBU	RESISTOR
C27		QETC1HM-474	E CAPACITOR	R7		NRD718J-221NBU	RESISTOR
C28		NCT02CH-100NBR	CAPACITOR	R8		NRD718J-473NBU	RESISTOR
C29		NCS71HJ-330NBR	CAPACITOR	R9		NRD718J-473NBU	RESISTOR
C30		NCY71CM-103NBR	CAPACITOR	R10		NRD718J-473NBU	RESISTOR
C31		QETC1HM-335	E CAPACITOR	R11		NRD718J-473NBU	RESISTOR
C32		NCF71EZ-223NBR	CAPACITOR	R14		NRD718J-102NBU	RESISTOR
C33		QETC1HM-474	E CAPACITOR	R15		NRD718J-102NBU	RESISTOR
C39		NCB71HK-102NYR	CAPACITOR	R16		NRD718J-102NBU	RESISTOR
C41		NCB71HK-102NBR	CAPACITOR	R19		NRD718J-102NBU	RESISTOR
C42		QCT25CH-680	CAPACITOR	R22		NRD718J-184NBU	RESISTOR
C43		NCB71HK-102NBR	CAPACITOR	R23		NRD718J-750NBU	RESISTOR
C44		NCT02CH-1R0NYR	CAPACITOR	R25		NRD718J-103NBU	RESISTOR
C45		QCT25HH-121	CAPACITOR	R38		NRD718J-103NBU	RESISTOR
C46		NCT02CH-5R6NBR	CAPACITOR	C1		QFN31HK-223	M CAPACITOR
C50		QETC1CM-336	E CAPACITOR	C2		QFV71HJ-474	M CAPACITOR
L2		PU60025-R68	PEAKING COIL				
L3		PU60025-1R0	PEAKING COIL				

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	OR	QFZ9011-474	MM CAPACITOR
C3		QETC1HM-106	E CAPACITOR
C4		QETC1CM-106	E CAPACITOR
C5		QETC1CM-336	E CAPACITOR
C7		NCS71HJ-270NBR	CAPACITOR
C8		NCS71HJ-270NBR	CAPACITOR
C9		NCY71CM-103NBR	CAPACITOR
C10		NCY71CM-103NBR	CAPACITOR
C11		NCY71CM-103NBR	CAPACITOR
C13		NCY71CM-103NBR	CAPACITOR
C14		NCY71CM-103NBR	CAPACITOR
C15		QEK61AM-336	E CAPACITOR
C16		NCY71CM-103NBR	CAPACITOR
C26		NCB71HK-102NBR	CAPACITOR
C27		NCB71HK-102NBR	CAPACITOR
C30		QETC1HM-225	E CAPACITOR
C38		NCB71HK-102NBR	CAPACITOR
△ X1		PU60029	CRYSTAL RESONATOR
HD1		PQ32168-1-3	HOLDER
SLD1		PU36374-01-01	SHIELD CASE
SLD2		PU36375	SHIELD COVER
SLD3		PU36376	SHIELD PLATE
WR1		PW30401-AF09T	COAXIAL CORD, (CN4-TUNER)
CN1		PU58844-2	CAP HOUSING
CN2		PU58844-4	CAP HOUSING
CN3		PU60417-6	CAP HOUSING
CN5		PU58844-3	CAP HOUSING

 * 10. AUDIO BOARD ASSEMBLY <09> *

PWBA	PB20209B	AUDIO BOARD ASSY
IC1	AN3380NK	IC
IC2	TA7361AP	IC
IC3	PB20167B-01	FMA MODULE
△ IC101	UPC78N05	IC
Q1	2SC1740S(RS)	TRANSISTOR
Q2	2SC3311(RS)	TRANSISTOR
Q3	DTC114ES	TRANSISTOR
Q4	2SC1740S(RS)	TRANSISTOR
Q5	DTC114ES	TRANSISTOR
Q6	DTC114ES	TRANSISTOR
Q7	DTC114ES	TRANSISTOR
Q8	DTA143ES	TRANSISTOR
Q9	DTA143ES	TRANSISTOR
Q10	2SC1740S(RS)	TRANSISTOR
Q11	2SC1740S(RS)	TRANSISTOR
Q12	DTC143TS	TRANSISTOR
Q13	DTC143TS	TRANSISTOR
Q14	2SC1740S(RS)	TRANSISTOR
Q15	2SC1740S(QR)	TRANSISTOR
Q16	2SC3311(RS)	TRANSISTOR
Q17	DTA114ES	TRANSISTOR
Q18	DTC114ES	TRANSISTOR
Q20	DTA114ES	TRANSISTOR
Q101	2SD1764	TRANSISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
Q102		2SA854S(QR)	TRANSISTOR
Q103		2SB1068(KU)	TRANSISTOR
D1		1SS133	DIODE
	OR	MA165	DIODE
D2		1SS133	DIODE
	OR	MA165	DIODE
D3		1SS133	DIODE
	OR	MA165	DIODE
D4		1SS133	DIODE
	OR	MA165	DIODE
D5		1SS133	DIODE
	OR	MA165	DIODE
D6		1SS133	DIODE
	OR	MA165	DIODE
D7		1SS133	DIODE
	OR	MA165	DIODE
D8		1SS133	DIODE
	OR	MA165	DIODE
D9		HZ2BLL	ZENER DIODE
D12		1SS133	DIODE
	OR	MA165	DIODE
D16		1SS133	DIODE
	OR	MA165	DIODE
D17		1SS133	DIODE
	OR	MA165	DIODE
D101		HZ12A2	ZENER DIODE
D102		1SS133	DIODE
	OR	MA165	DIODE
R3		QRD161J-102	RESISTOR
R4		QRD161J-682	RESISTOR
R5		QRD161J-151	RESISTOR
R6		QRD161J-152	RESISTOR
R7		QRD161J-222	RESISTOR
R8		QRD161J-100	RESISTOR
R9		QVZ3518-473	V RESISTOR, BIAS ADJ
R10		QRD161J-333	RESISTOR
R11		QRD161J-473	RESISTOR
R12		QRD161J-101	RESISTOR
R13		QRD161J-273	RESISTOR
R14		QRD161J-3R9	RESISTOR
R15		QRD161J-103	RESISTOR
R16		QRD161J-103	RESISTOR
R17		QRD161J-102	RESISTOR
R20		QRD161J-223	RESISTOR
R21		QRD161J-101	RESISTOR
R22		QRD161J-151	RESISTOR
R23		QRD161J-243	RESISTOR
R24		QRD161J-153	RESISTOR
R25		QRD161J-103	RESISTOR
R26		QRD161J-204	RESISTOR
R27		QRD161J-331	RESISTOR
R28		QVZ3518-102	V RESISTOR, PB LEVEL ADJ
R29		QRD161J-102	RESISTOR
R31		QRD161J-151	RESISTOR
R32		QRD161J-102	RESISTOR
R33		QRD161J-102	RESISTOR
R34		QRD161J-151	RESISTOR
R40		QVZ3518-223	V RESISTOR, E-E LEVEL (L)
R41		QVZ3518-223	V RESISTOR, E-E LEVEL (R)
R43		QRD161J-101	RESISTOR
R44		QRD161J-101	RESISTOR
R45		QRD162J-392	RESISTOR
R46		QRD161J-332	RESISTOR
R47		QRD161J-123	RESISTOR
R48		QRD161J-223	RESISTOR
R49		QRD161J-274	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION	#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R50	QRD161J-222	RESISTOR		C22	QETB1EM-475	E CAPACITOR
	R51	QRD161J-222	RESISTOR		C24	QCB81HJ-821	CAPACITOR
	R52	QRD161J-103	RESISTOR		C25	QETC1HM-225	E CAPACITOR
	R53	QRD161J-333	RESISTOR		C26	QETC1AM-336	E CAPACITOR
	R54	QRD161J-183	RESISTOR		C27	QETC0JM-476	E CAPACITOR
	R55	QRD161J-392	RESISTOR		C28	QFV71HJ-104	M CAPACITOR
	R56	QRD161J-152	RESISTOR		C29	QFV71HJ-273	M CAPACITOR
	R57	QRD161J-181	RESISTOR		OR	QFN31HJ-273	M CAPACITOR
	R58	QRD162J-333	RESISTOR		C30	QETC1HM-105	E CAPACITOR
	R59	QRD162J-333	RESISTOR				
	R60	QRD161J-333	RESISTOR		C31	QETC1CM-106	E CAPACITOR
	R61	QRD161J-333	RESISTOR		C32	QFN31HJ-103	M CAPACITOR
	R62	QRD161J-333	RESISTOR		C33	QEK61HM-334	E CAPACITOR
	R63	QRD161J-102	RESISTOR		C34	QEB51CM-685	E CAPACITOR
	R64	QRD161J-331	RESISTOR		C35	QEB51HM-105	E CAPACITOR
	R65	QRD161J-223	RESISTOR		C36	QETB1CM-106	E CAPACITOR
	R66	QRD161J-6R8	RESISTOR		C37	QETC1AM-336	E CAPACITOR
	R67	QRD161J-333	RESISTOR		C38	QETC1CM-476	E CAPACITOR
	R68	QRD161J-333	RESISTOR		C39	QETC1AM-336	E CAPACITOR
	R70	QRD161J-273	RESISTOR		C40	QETC1CM-106	E CAPACITOR
	R72	QRD161J-392	RESISTOR		C41	QETC1CM-476	E CAPACITOR
	R73	QVZ3518-332	V RESISTOR,LEVEL IND (L)		C42	QETC1HM-225	E CAPACITOR
	R74	QVZ3518-332	V RESISTOR,LEVEL IND (R)		C43	QETC1CM-106	E CAPACITOR
	R76	QRD162J-151	RESISTOR		C44	QETC1HM-225	E CAPACITOR
	R80	QVZ3518-471	V RESISTOR,FM REC ADJ		C45	QEN61HM-225	NP E CAPACITOR
	R81	QRD161J-103	RESISTOR		C46	QEN61HM-225	NP E CAPACITOR
	R82	QRD161J-153	RESISTOR		C47	QETC1HM-225	E CAPACITOR
	R83	QRD161J-473	RESISTOR		C49	QCF31HP-223	CAPACITOR
	R84	QRD162J-473	RESISTOR		C50	QFV71HJ-104	M CAPACITOR
	R85	QRD162J-222	RESISTOR		OR	QFN31HJ-104	M CAPACITOR
	R86	QRD161J-103	RESISTOR				
	R87	QRD162J-102	RESISTOR		C51	QFV71HJ-104	M CAPACITOR
	R88	QRD161J-102	RESISTOR		OR	QFN31HJ-104	M CAPACITOR
	R89	QRD161J-680	RESISTOR		C52	QFV71HJ-104	M CAPACITOR
	R90	QRD161J-561	RESISTOR		OR	QFN31HJ-104	M CAPACITOR
	R91	QRD161J-103	RESISTOR		C53	QCF31HP-223	CAPACITOR
	R94	QRD161J-103	RESISTOR		C54	QEK60JM-107	E CAPACITOR
	R95	QRD161J-182	RESISTOR		C55	QCVB1CN-103	CAPACITOR
	R101	QRD161J-182	RESISTOR		C56	QCB81HJ-102	CAPACITOR
	R103	QRD161J-103	RESISTOR		C57	QCSB1HJ-330	CAPACITOR
	R104	QRD161J-222	RESISTOR		C58	QCB81HJ-331	CAPACITOR
	R105	QRD161J-103	RESISTOR		C59	QCB81HJ-102	CAPACITOR
	R106	QRD161J-681	RESISTOR		C60	QCVB1CN-103	CAPACITOR
	C1	QETC1CM-106	E CAPACITOR		C61	QCVB1CN-103	CAPACITOR
	C2	QETC1AM-476	E CAPACITOR		C62	QCVB1CN-103	CAPACITOR
	C3	QEP61CM-106	NP E CAPACITOR		C63	QCC31EJ-272	CAPACITOR
	C4	QETC1CM-106	E CAPACITOR		C66	QETC1CM-106	E CAPACITOR
	C5	QETC1CM-226	E CAPACITOR		C67	QETC1CM-106	E CAPACITOR
	C6	QETC1AM-336	E CAPACITOR		C68	QETC1HM-225	E CAPACITOR
	C7	QETC1AM-476	E CAPACITOR		C69	QETC1HM-225	E CAPACITOR
	C8	QCB81HK-102	CAPACITOR		C70	QCB81HJ-391	CAPACITOR
	C9	QCB81HK-101	CAPACITOR				
	C10	QETC1AM-336	E CAPACITOR		C71	QCB81HJ-391	CAPACITOR
	C11	QETC1AM-107	E CAPACITOR		C72	QCB81HK-561	CAPACITOR
	C12	QETC1CM-226	E CAPACITOR		C73	QCB81HK-561	CAPACITOR
	C13	QETB1CM-106	E CAPACITOR		C74	QCC11EJ-332	CAPACITOR
	C14	QEP61CM-106	NP E CAPACITOR		C75	QCC11EJ-102	CAPACITOR
	C15	QETC1AM-476	E CAPACITOR		C76	QFV71HJ-333	M CAPACITOR
	C16	QETC1CM-106	E CAPACITOR		OR	QFN31HJ-333	M CAPACITOR
	C17	QCB81HJ-331	CAPACITOR		C77	QETC1CM-106	E CAPACITOR
	C18	QFV71HJ-223	M CAPACITOR		C78	QFV71HJ-104	M CAPACITOR
	OR	QFN31HJ-223	M CAPACITOR		OR	QFN31HJ-104	M CAPACITOR
	C19	QCC11EJ-222	CAPACITOR		C79	QCC11EJ-273	CAPACITOR
	C20	QCC11EJ-102	CAPACITOR		C80	QFL31HJ-682	M CAPACITOR
	C21	QEK61CM-226	E CAPACITOR		OR	QFN31HJ-682	M CAPACITOR
					C81	QCB81HJ-331	CAPACITOR
					C101	QEK51CM-476	E CAPACITOR
					C102	QCB81HK-102	CAPACITOR
					C103	QEK61HM-105	E CAPACITOR
					C104	QETC1CM-106	E CAPACITOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L1	PU54223-101J	PEAKING COIL
	L3	PU58308-472J	PEAKING COIL
	L4	PU54223-221J	PEAKING COIL
	L5	PU54223-101J	PEAKING COIL
	BPF1	PU60396	BAND PASS FILTER
	BPF2	PU60397	BAND PASS FILTER
△	T1	PU60320	OSC TRANSFORMER
△	T2	PU60321	OSC TRANSFORMER
	HN1	PU58018-1-2	PWB HINGE, X2
△	HS1	PU60185	HEAT SINK, FOR Q101
	HS2	PU60261	HEAT SINK, FOR IC101
	SCW1	DPSP3008Z	SCREW, FOR Q101
	SLD1	PU59960	P/R AMP SHIELD1
	SLD2	PU59961	P/R AMP SHIELD2
	TP31	PU55774	TEST PIN, X7, (TP31-34, 53, 54, GND
	CN1	PU58844-3	CAP HOUSING
	CN2	PU60417-8	CAP HOUSING
	CN3	PU60417-6	CAP HOUSING
	CN4	PU58844-4	CAP HOUSING
	CN5	PU58844-4	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING
	CN7	PU58844-4	CAP HOUSING
	CN8	PU58844-7	CAP HOUSING
	CN9	PU58844-3	CAP HOUSING
	CN10	PU59555-5	CAP HOUSING
	CN11	PU58844-3	CAP HOUSING
	CN12	PU60417-6	CAP HOUSING
	CN13	PU58844-4	CAP HOUSING
	CN14	PU58844-2	CAP HOUSING

 * 11. MIC AMP BOARD ASSEMBLY <10> *

PWBA	PB30063A	MIC AMP BOARD ASSY
IC1	BA15218 OR M5218P	IC IC
Q1	2SC3311A	TRANSISTOR
Q2	2SC1740S(Q)	TRANSISTOR
Q3	2SC1740S(Q)	TRANSISTOR
Q4	2SC1740S(RS)	TRANSISTOR
D1	1SS133 OR MA165	DIODE DIODE
R1	QRD161J-122	RESISTOR
R2	QRD161J-103	RESISTOR
R3	QRD161J-154	RESISTOR
R4	QRD161J-154	RESISTOR
R7	QRD161J-101	RESISTOR
R8	QRD161J-101	RESISTOR
R9	QRD161J-102	RESISTOR
R10	QRD161J-102	RESISTOR
R11	QRD161J-103	RESISTOR
R12	QRD161J-103	RESISTOR
R13	QRD161J-362	RESISTOR
R14	QRD161J-362	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R15	QRD161J-102	RESISTOR
	R16	QRD161J-223	RESISTOR
	R17	QRD161J-273	RESISTOR
	R18	QRD161J-104	RESISTOR
	R19	QRD161J-124	RESISTOR
	R20	QRD161J-222	RESISTOR
	R21	QRD161J-823	RESISTOR
	R22	QRD161J-271	RESISTOR
	R23	QRD161J-473	RESISTOR
	R24	QRD161J-222	RESISTOR
	C1	QETC1CM-476	E CAPACITOR
	C2	QETC1CM-106	E CAPACITOR
	C3	QETC1HM-105	E CAPACITOR
	C4	QETC1HM-105	E CAPACITOR
	C5	QEP61HM-335	NP E CAPACITOR
	C6	QEP61HM-335	NP E CAPACITOR
	C7	QETC1CM-476	E CAPACITOR
	C8	QETC1HM-105	E CAPACITOR
	C9	QETC1CM-476	E CAPACITOR
	C10	QCB81HJ-121	CAPACITOR
	C11	QETC1EM-475	E CAPACITOR
	C12	QETC1HM-105	E CAPACITOR
	C13	QETC1HM-105	E CAPACITOR
	SLD1	PQ42581	PRE AMP SHIELD1
	SLD2	PQ42583	PRE AMP SHIELD3
	CN1	PU58844-103	CAP HOUSING
	CN2	PU58844-3	CAP HOUSING
	CN3	PU58844-104	CAP HOUSING

 * 12. AUDIO CONTROL HEAD ASSEMBLY <12> *

PWB1	PB40018	A/C HEAD BOARD
CN1	PU58844-104R	CAP HOUSING
CN2	PU58844-103	CAP HOUSING

 * 13. DEMODULATOR BOARD ASSEMBLY <14> *

PWBA	PB201290	DEMODULATOR BOARD ASSY
IC1	CX20112	IC
IC2	CXA1011P	IC
IC3	CXA1011P	IC
IC4	M5239L	IC
Q1	2SD1468S(SE)	TRANSISTOR
Q2	2SD1468S(SE)	TRANSISTOR
Q3	2SD1468S(SE)	TRANSISTOR
Q4	DTA114ES	TRANSISTOR
Q5	DTA144WS	TRANSISTOR
△ Q7	2SD1450S,T	TRANSISTOR
Q8	2SC1740S(RS)	TRANSISTOR
Q9	2SC1740S(RS)	TRANSISTOR
Q10	2SC1740S(RS)	TRANSISTOR
D1	MTZ10D	ZENER DIODE
D2	MTZ6.8B	ZENER DIODE

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
D3		1SS133	DIODE
D4		1SS133	DIODE
D5		1SS133	DIODE
D8		1SS133	DIODE
D9		1SS133	DIODE
D12		1SS133	DIODE
D13		1SS133	DIODE
D15		1SS133	DIODE
D16		1SS133	DIODE
R1		QRD161J-822	RESISTOR
R2		QRV144F-1203A	CMF RESISTOR
R3		QVZ3531-333	V RESISTOR, ST FILTER ADJ
R4		QRV144F-1203A	CMF RESISTOR
R5		QVZ3531-333	V RESISTOR, SAP FILTER ADJ
R6		QRD161J-154	RESISTOR
R11		QRD161J-103	RESISTOR
R13		QRD161J-471	RESISTOR
R14		QRD161J-471	RESISTOR
R15		QRD161J-103	RESISTOR
R16		QRD161J-102	RESISTOR
R17		QRD161J-102	RESISTOR
R18		QVZ3518-472	V RESISTOR, SAP LEVEL
R19		QVZ3518-103	V RESISTOR, SEPARATION
R20		QRD161J-362	RESISTOR
R21		QRD161J-154	RESISTOR
R22		QVZ3518-104	V RESISTOR, L+R LEVEL
R23		QVZ3531-332	V RESISTOR, ST VCO ADJ
R24		QRD161J-332	RESISTOR
R25		QRD161J-561	RESISTOR
R26		QVZ3518-103	V RESISTOR, L-R LEVEL
R27		QRV144F-5603A	CMF RESISTOR
R28		QRV144F-2322A	CMF RESISTOR
R29		QRD161J-222	RESISTOR
R30		QRD161J-182	RESISTOR
R31		QRD161J-473	RESISTOR
R32		QRD161J-361	RESISTOR
R33		QRD161J-301	RESISTOR
R34		QRD161J-682	RESISTOR
R35		QRD161J-752	RESISTOR
R36		QVZ3518-682	V RESISTOR, SPECTRUM
R37		QRV144F-5603A	CMF RESISTOR
R38		QRV144F-2322A	CMF RESISTOR
R39		QRD161J-272	RESISTOR
R40		QRD161J-561	RESISTOR
R41		QRD161J-153	RESISTOR
R42		QRD161J-361	RESISTOR
R43		QRD161J-682	RESISTOR
R44		QRD161J-752	RESISTOR
R45		QRD161J-272	RESISTOR
R46		QRD161J-102	RESISTOR
R47		QRD161J-102	RESISTOR
R48		QRD161J-332	RESISTOR
R49		QRD161J-332	RESISTOR
R50		QRD161J-332	RESISTOR
R53		QRD182J-271	RESISTOR
R54		QRD161J-301	RESISTOR
R55		QVZ3518-472	V RESISTOR, SAP LEVEL
R56		QRD161J-683	RESISTOR
R57		QRD161J-183	RESISTOR
R58		QRD161J-221	RESISTOR
R59		QRD161J-104	RESISTOR
R60		QRD161J-104	RESISTOR
R61		QRD161J-153	RESISTOR
R62		QRD161J-472	RESISTOR
R63		QRD161J-125	RESISTOR
R64		QRD161J-472	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
R65		QRD161J-392	RESISTOR
R67		QRD161J-473	RESISTOR
R70		QRD161J-103	RESISTOR
R73		QRD161J-103	RESISTOR
R74		QRD161J-103	RESISTOR
R76		QRV144F-1002A	CMF RESISTOR
R78		QRD161J-822	RESISTOR
R79		QRD161J-102	RESISTOR
C1		QEK61CM-106	E CAPACITOR
C2		QCC11EK-473	CAPACITOR
C3		QEK61CM-106	E CAPACITOR
C4		QCC11EK-223	CAPACITOR
C5		QEK61HM-105	E CAPACITOR
C6		QEK61HM-105	E CAPACITOR
C8		QFL31HJ-472	M CAPACITOR
C10		QEK61CM-106	E CAPACITOR
C11		QEK61CM-106	E CAPACITOR
C12		QFV71HJ-223	M CAPACITOR
C13		QEK61CM-106	E CAPACITOR
C14		PU58285-182J	PP CAPACITOR
C15		QEK61HM-105	E CAPACITOR
C16		QEK61EM-475	E CAPACITOR
C17		QEK61CM-106	E CAPACITOR
C18		QEK61CM-106	E CAPACITOR
C19		QEK61CM-106	E CAPACITOR
C20		QEE81CJ-335	TANTAL CAPACITOR
C21		QEK61HM-105	E CAPACITOR
C22		QEE81CJ-106	TANTAL CAPACITOR
C23		QEK61HM-225	E CAPACITOR
C24		QEK61CM-106	E CAPACITOR
C25		QETC1CM-107	E CAPACITOR
C26		QFL31HJ-472	M CAPACITOR
C27		QEK61HM-105	E CAPACITOR
C28		QEN61CM-106	NP E CAPACITOR
C29		QFV71HJ-223	M CAPACITOR
C30		QFV71HJ-104	M CAPACITOR
C31		QEK61HM-105	E CAPACITOR
C32		QEK61CM-106	E CAPACITOR
C33		QEE81CJ-335	TANTAL CAPACITOR
C34		QEK61HM-105	E CAPACITOR
C35		QEE81CJ-106	TANTAL CAPACITOR
C36		QEK61HM-225	E CAPACITOR
C37		QEK61CM-106	E CAPACITOR
C38		QETC1CM-107	E CAPACITOR
C39		QFL31HJ-152	M CAPACITOR
C41		QEN61CM-106	NP E CAPACITOR
C42		QFV71HJ-223	M CAPACITOR
C43		QFV71HJ-104	M CAPACITOR
C44		QEK61HM-105	E CAPACITOR
C45		QEK61CM-106	E CAPACITOR
C46		QCSB1HJ-220	CAPACITOR
C47		QETC1CM-107	E CAPACITOR
C48		QCVB1CN-103	CAPACITOR
C49		QCB81HJ-221	CAPACITOR
C50		QEK61HM-105	E CAPACITOR
C51		QFL31HJ-102	M CAPACITOR
C52		QCB81HJ-331	CAPACITOR
C58		QFV71HJ-123	M CAPACITOR
C59		QFV71HJ-123	M CAPACITOR
L1		PU60036-821K	COIL, 820 MICRO
L2		PU60211	LOW PASS FILTER
L3		PU60211	LOW PASS FILTER
CN2		PU58844-3	CAP HOUSING
CN3		PU58844-3	CAP HOUSING
CN5		PU58844-7	CAP HOUSING

#	REF NO.	PART NO.	PART NAME, DESCRIPTION

* 14. ON SCREEN BOARD ASSEMBLY <17> *			

PWBA	PB20264A	ON SCREEN BOARD ASSY	
IC1	MB89010A-114	IC	
IC2	M52684AP	IC	
IC3	BU4011B	IC	
OR	TC4011BP	IC	
IC4	BU4013B	IC	
OR	TC4013BP	IC	
Q2	2SC3311A(RS)	TRANSISTOR	
OR	2SC536SPA(FG)	TRANSISTOR	
D1	1SS133	DIODE	
R1	QRD161J-472	RESISTOR	
R2	QRD161J-472	RESISTOR	
R3	QRD161J-472	RESISTOR	
R4	QRD161J-472	RESISTOR	
R5	QRD161J-472	RESISTOR	
R6	QRD161J-472	RESISTOR	
R7	QRD161J-154	RESISTOR	
R8	QRD161J-182	RESISTOR	
R10	QRD161J-181	RESISTOR	
R11	QRD161J-472	RESISTOR	
R12	QRD161J-332	RESISTOR	
R13	QRD161J-102	RESISTOR	
R14	QRD161J-122	RESISTOR	
R15	QRD161J-272	RESISTOR	
R16	QRD161J-102	RESISTOR	
R17	QRD161J-152	RESISTOR	
R18	QRD161J-271	RESISTOR	
R19	QRD161J-103	RESISTOR	
R20	QRD161J-152	RESISTOR	
R21	QRD161J-102	RESISTOR	
R22	QRD161J-103	RESISTOR	
R23	QRD161J-102	RESISTOR	
R24	QRD161J-103	RESISTOR	
R25	QRD161J-102	RESISTOR	
R26	QRD161J-103	RESISTOR	
R27	QRD161J-104	RESISTOR	
R28	QRD161J-473	RESISTOR	
R29	QRD161J-472	RESISTOR	
R30	QRD161J-473	RESISTOR	
C1	QETC1HM-335	E CAPACITOR	
C2	QCB81HJ-101	CAPACITOR	
C3	QETC0JM-107	E CAPACITOR	
C4	QCVB1CN-103	CAPACITOR	
C5	QCVB1CN-103	CAPACITOR	
C6	QCSB1HJ-220	CAPACITOR	
C7	QCXB1CN-152	CAPACITOR	
C8	QETC1HM-105	E CAPACITOR	
C9	QFN31HJ-222	M CAPACITOR	
C10	QCVB1CN-103	CAPACITOR	
C11	QETC0JM-476	E CAPACITOR	
C12	QCC11EK-473	CAPACITOR	
C13	QETC0JM-337	E CAPACITOR	
C14	QETC1HM-474	E CAPACITOR	
C15	PU57672-400	TRIMMER CAPACITOR,CHARA POSI	
C16	QCSB1HJ-150	CAPACITOR	
C17	QCSB1HJ-560	CAPACITOR	
C18	PU57672-300	TRIMMER CAPACITOR,BACK COLOR	

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C19	QCSB1HJ-150	CAPACITOR
	C20	QCSB1HJ-560	CAPACITOR
	C21	QCVB1CN-103	CAPACITOR
	C22	QCVB1CN-103	CAPACITOR
	L1	PU48530-101J	PEAKING COIL
	L2	PU48530-100J	PEAKING COIL
	L3	PU58333-180K	PEAKING COIL
Δ	CF1	PU60086	RESONATOR
Δ	X1	PU59965	CRYSTAL RESONATOR
	CN1	PU60417-106	CAP HOUSING
	CN2	PU58844-107	CAP HOUSING
	CN3	PU58844-102	CAP HOUSING

* 15. T/DISP/JUNC BOARD ASSY <20><28><30> *			

PWBA	PB10174A-01	TIMER/DISP JUNCTION BOARD ASSY	
	-TIMER BOARD ASSEMBLY <20>-		
PWBA2	PB10174A2-01	TIMER BOARD ASSY <20>	
IC1	HD404709A04S	IC	
OR	HD4074709S9A04	IC	
IC2	MN12C25D	IC	
Q1	2SC536SPA(FG)	TRANSISTOR	
OR	2SC3311A(RS)	TRANSISTOR	
Q2	2SC536SPA(FG)	TRANSISTOR	
OR	2SC3311A(RS)	TRANSISTOR	
Q3	2SC3401	TRANSISTOR	
Q4	2SC536SPA(FG)	TRANSISTOR	
OR	2SC3311A(RS)	TRANSISTOR	
Q5	2SC536SPA(FG)	TRANSISTOR	
OR	2SC3311A(RS)	TRANSISTOR	
Q6	2SC536SPA(FG)	TRANSISTOR	
OR	2SC3311A(RS)	TRANSISTOR	
Q7	2SC3400	TRANSISTOR	
OR	DTC124ES	TRANSISTOR	
Q8	2SC3400	TRANSISTOR	
OR	DTC124ES	TRANSISTOR	
Q9	2SC3400	TRANSISTOR	
OR	DTC124ES	TRANSISTOR	
Q10	DTC114YS	TRANSISTOR	
OR	UN4214	TRANSISTOR	
Q11	DTA114ES	TRANSISTOR	
D1	RD10ES-T1B2	ZENER DIODE	
OR	UZ10BSB	ZENER DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D5	RD6.2ES-T1B3	ZENER DIODE	
OR	UZ6.2BSB	ZENER DIODE	
D6	1SS133	DIODE	
D7	LTZ-MR15	ZENER DIODE	
D8	1SS133	DIODE	
R1	QRD161J-333	RESISTOR	
R2	QRD161J-122	RESISTOR	
R3	QRD161J-151	RESISTOR	
R4	QRD161J-333	RESISTOR	
R5	QRD161J-123	RESISTOR	
R6	QRD161J-104	RESISTOR	

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R7	QRD161J-224	RESISTOR
	R8	QRD161J-333	RESISTOR
	R9	QRD161J-473	RESISTOR
	R10	QRD161J-473	RESISTOR
	R11	QRD161J-104	RESISTOR
	R12	QRD161J-332	RESISTOR
	R13	QRD161J-152	RESISTOR
	R14	QRD161J-104	RESISTOR
	R15	QRD161J-561	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-472	RESISTOR
	R19	QRD161J-472	RESISTOR
	R20	QRD161J-472	RESISTOR
	R21	QRD161J-105	RESISTOR
	R22	QRD161J-103	RESISTOR
	R23	QRD161J-472	RESISTOR
	R24	QRD161J-392	RESISTOR
	R25	QRD161J-333	RESISTOR
	R26	QRD161J-103	RESISTOR
	R27	QRD161J-103	RESISTOR
	R28	QRD161J-472	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-103	RESISTOR
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-103	RESISTOR
	R33	QRD161J-103	RESISTOR
	R34	QRD161J-472	RESISTOR
	R35	QRD161J-472	RESISTOR
	R36	QRD161J-472	RESISTOR
	R37	QRD161J-472	RESISTOR
	R38	QRD161J-472	RESISTOR
	R39	QRD161J-472	RESISTOR
	R40	QRD161J-472	RESISTOR
	R41	QRD161J-472	RESISTOR
	R42	QRD161J-472	RESISTOR
	R43	QRD161J-472	RESISTOR
	R44	QRD161J-472	RESISTOR
	R45	QRD161J-472	RESISTOR
	R46	QRD161J-472	RESISTOR
	R47	QRD161J-472	RESISTOR
	R48	QRD161J-472	RESISTOR
	R49	QRD161J-472	RESISTOR
	RA1	QRB117J-104	NETWORK RESISTOR
	OR	QRB119J-104	NETWORK RESISTOR
	RA2	QRB137J-104	RESISTOR ARRAY
	OR	QRB139J-104	NETWORK RESISTOR
	RA3	QRB067J-224	RESISTOR ARRAY
	OR	QRB069J-224	RESISTOR ARRAY
	RA4	QRB047J-333	RESISTOR ARRAY
	OR	QRB049J-333	ARRAY
	C1	QETC1CM-336	E CAPACITOR
	C2	QETC1CM-106	E CAPACITOR
	C3	QETCOJM-476	E CAPACITOR
	C4	PU60676-474	BACK UP CAP
	C5	QETCOJM-226	E CAPACITOR
	C6	QETC1CM-106	E CAPACITOR
	C7	QCVB1CN-103	CAPACITOR
	C8	QCVB1CN-103	CAPACITOR
	C9	QCC11EK-473	CAPACITOR
	C10	QETCOJM-107	E CAPACITOR
	C11	QCVB1CN-103	CAPACITOR
	C12	QETC1HM-106	E CAPACITOR
Δ	CF1	PU59545	RESONATOR
	SPC1	PU59210-002	W.LOKING SPACER

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	WR1	PW30116-40AAZZF	PARALLEL WIRE
	WR2	PW30116-40AAZZF	PARALLEL WIRE
	WR3	PW30116-40AAZZA	PARALLEL WIRE
	CN1	PU58844-6	CAP HOUSING
	CN2	PU60417-6	CAP HOUSING
	CN3	PU60417-6	CAP HOUSING
	CN4	PU60417-6	CAP HOUSING
	CN5	PU58844-2	CAP HOUSING
	-DISPLAY BOARD ASSEMBLY <28>-		
	PWBA1	PB10174A1-01	DISPLAY BOARD ASSY<28>
	IC101	PU60582-1-1	LEVEL INDICATOR
	IC201	SBX1492-01	INFRARED RAYS UNIT
	IC202	M50255P	IC
	Q201	2SC3311A(RS)	TRANSISTOR
	OR	2SC536SPA(FG)	TRANSISTOR
	Q202	2SC3311A(RS)	TRANSISTOR
	OR	2SC536SPA(FG)	TRANSISTOR
	D200	MTZ5.1B	ZENER DIODE
	D202	SLR-55VC3F	LE DIODE
	D203	SLR-55DC3F	LE DIODE
	D204	SLR-55MC3F	LE DIODE
	D205	SLR-55MC3F	LE DIODE
	D206	SLR-55MC3F	LE DIODE
	D207	SLR-55VC3F	LE DIODE
	D209	SLR-55VC3F	LE DIODE
	D210	SLR-55VC3F	LE DIODE
	D211	SLR-55VC3F	LE DIODE
	D212	SLR-55VC3F	LE DIODE
	D213	SLR-55MC3F	LE DIODE
	D218	SLR-55VC3F	LE DIODE
	D219	SLR-55VC3F	LE DIODE
	D220	SLR-55VC3F	LE DIODE
	D224	SLR-55MC3F	LE DIODE
	D225	SLR-34MC3F	LE DIODE
	D226	SLR-34MC3F	LE DIODE
	D227	SLR-34MC3F	LE DIODE
	D402	1SS133	DIODE
	D405	1SS133	DIODE
	D406	1SS133	DIODE
	R106	QRD161J-392	RESISTOR
	R201	QRD161J-331	RESISTOR
	R202	QRD161J-331	RESISTOR
	R203	QRD161J-331	RESISTOR
	R204	QRD161J-331	RESISTOR
	R205	QRD161J-331	RESISTOR
	R206	QRD161J-331	RESISTOR
	R207	QRD161J-681	RESISTOR
	R208	QRD161J-331	RESISTOR
	R209	QRD161J-331	RESISTOR
	R210	QRD161J-331	RESISTOR
	R211	QRD161J-331	RESISTOR
	R213	QRD161J-472	RESISTOR
	R214	QRD161J-472	RESISTOR
	R215	QRD161J-472	RESISTOR
	R216	QRD161J-472	RESISTOR
	R218	QRD161J-101	RESISTOR
	R219	QRD161J-104	RESISTOR
	R220	QRD161J-104	RESISTOR
	R221	QRD161J-471	RESISTOR

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R222	QRD161J-101	RESISTOR
	R223	QRD161J-102	RESISTOR
	R224	QRD161J-0R0	RESISTOR
	R225	QRD161J-102	RESISTOR
	R401	PU60644-3	V RESISTOR,V.LOCK
	R402	PU57948-2	V. RESISTOR,PICTURE SHARPNESS
	R405	PU60652	SLIDE VR,HIFI REC LEVEL
	C105	QEK60JM-107	E CAPACITOR
	C106	QEK61HM-105	E CAPACITOR
	C107	QEK61HM-105	E CAPACITOR
	C201	QCFB1EZ-223	CAPACITOR
	C202	QCB81HJ-331	CAPACITOR
	C203	QCB81HJ-121	CAPACITOR
	S210	PU53598	TACT SWITCH,TRACK(+)
	S211	PU53598	TACT SWITCH,TRACK(-)
	FDP1	PU59955-4	FLUORESCENT DISPLAY PANEL
	CL1	PU59311-2	WIRE CLAMP
	HD1	PQM30038-1-2	LED HOLDER,X15
	HD2	PQ31355-1-2	FDP HOLDER(R)
	HD3	PQ31356-1-2	FDP HOLDER(L)
	SLD1	PQ42602	LED SHADE
	CN7	PU59513-4	CAP HOUSING
	CN8	PU58844-102	CAP HOUSING
	CN9	PU60417-105	CAP HOUSING
	CN16	PU58844-102	CAP HOUSING
	-JUNCTION BOARD ASSEMBLY <30>-		
	PWBA3	PB10174A3-01	JUNCTION BOARD ASSY<30>
	D101	1SS132	DIODE
	D102	1SS132	DIODE
	D103	1SS132	DIODE
	D104	1SS132	DIODE
	R217	QRD161J-103	RESISTOR
	CN14	PU60566-112	FPC CONNECTOR
	CN15	PU60417-12	CAP HOUSING

	* 16. SW/JACK BOARD ASSEMBLY <25><26> *		

	PWBA	PB101188	JACK/SW BOARD ASSY
	-SW BOARD ASSEMBLY <25>-		
	PWBA1	PB1011881	SWITCH BOARD<25>
	D2	SLH-34VT3F	LE DIODE
	R3	QRD161J-331	RESISTOR
	R4	QRD161J-223	RESISTOR
	R5	QRD161J-331	RESISTOR
	SW1	PU57550	TACT SWITCH, POWER SW
	SW2	PU58486-1-1	SLIDE SWITCH, AC ONLINE
	SW4	PU58486-1-1	SLIDE SWITCH, EDIT

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SW5	PU58486-1-1	SLIDE SWITCH, NOTCH
	SW6	PU58486-1-1	SLIDE SWITCH, ALC
	SW7	PU58488-1-1	SLIDE SWITCH, METER
	HD1	PQM30038-3	LED HOLDER
	CN3	PU59513-3	CAP HOUSING
	CN4	PU59513-5	CAP HOUSING
	CN5	PU59513-2	CAP HOUSING
	-JACK BOARD ASSEMBLY <26>-		
	PWBA2	PB10118A2	JACK BOARD ASSY <26>
	R1	PU60565	V RESISTOR,HEAD PHONE
	R2	QRD161J-103	RESISTOR
	J1	PU58356-2	JACK(HEADPHONE)
	J2	PU58355-2	MIC JACK

	* 17. OPERATION BOARD ASSEMBLY <29> *		

	PWBA	PB10177A	OPERATION BOARD ASSY
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-122	RESISTOR
	R3	QRD161J-222	RESISTOR
	R4	QRD161J-332	RESISTOR
	R5	QRD161J-472	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-122	RESISTOR
	R8	QRD161J-222	RESISTOR
	R9	QRD161J-332	RESISTOR
	R10	QRD161J-472	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-223	RESISTOR
	R13	QRD161J-563	RESISTOR
	SW1	PU57550	TACT SWITCH,STOP
	SW2	PU57550	TACT SWITCH,PAUSE/STILL
	SW3	PU57550	TACT SWITCH,PLAY/X2
	SW4	PU57550	TACT SWITCH,REW
	SW5	PU57550	TACT SWITCH,FF
	SW6	PU57550	TACT SWITCH,EJECT
	SW7	PU57550	TACT SWITCH,MARK
	SW8	PU57550	TACT SWITCH,ERASE
	SW9	PU57550	TACT SWITCH,VIDEO/TV
	SW10	PU57550	TACT SWITCH,AUDIO MONITOR
	SW12	PU57550	TACT SWITCH,S-VHS
	SW13	PU57550	TACT SWITCH,INSERT
	SW14	PU57550	TACT SWITCH,AUDIO DUBBING
	SW15	PU57550	TACT SWITCH,REC/ITR
	SW16	PU57550	TACT SWITCH,CHANNEL UP
	SW17	PU57550	TACT SWITCH,SKIP/COUNTOR RESET
	SW18	PU57550	TACT SWITCH,CHANNEL DOWN
	SW19	PU57550	TACT SWITCH,SIMAL CAST
	SW20	PU57550	TACT SWITCH,REPEAT/STORE
	SW21	PU57550	TACT SWITCH,SESECT
	SW22	PU57550	TACT SWITCH,SET(+)
	SW23	PU57550	TACT SWITCH,COUNTER MEMORY
	SW24	PU57550	TACT SWITCH,MENU
	SW25	PU57550	TACT SWITCH,TIMER
	SW26	PU57550	TACT SWITCH,SET(-)
	J1	PU36465	FPC

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION

* 18. UPPER DRUM BOARD <41> *			

PWBA	PDM3161	UPPER DRUM BOARD, X2	

* 19. PRE/REC AMP BOARD ASSEMBLY <43> *			

PWBA	PB10115A	PRE/REC BOARD ASSY	
IC1	HA118019NT	IC	
IC3	AN6392	IC	
IC4	BU4030BF	IC	
Q1	2SC2412K	TRANSISTOR	
Q2	2SC2412K	TRANSISTOR	
Q11	2SA1037K	TRANSISTOR	
Q12	2SA1037K	TRANSISTOR	
Q13	DTC144EK	TRANSISTOR	
Q14	DTC144EK	TRANSISTOR	
Q15	DTA124EK	TRANSISTOR	
Q16	DTC144EK	TRANSISTOR	
Q17	DTA124EK	TRANSISTOR	
Q21	DTC124EK	TRANSISTOR	
D1	1SS133	DIODE	
D2	1SS133	DIODE	
D5	DAN202K	DIODE	
D6	DAN202K	DIODE	
D7	1SS133	DIODE	
R1	QRSA08J-122YN	RESISTOR	
R2	QRSA08J-122YN	RESISTOR	
R3	QRSA08J-470YN	RESISTOR	
R4	QRSA08J-270YN	RESISTOR	
R5	QRSA08J-270YN	RESISTOR	
R6	QRSA08J-390YN	RESISTOR	
R7	QRSA08J-103YN	RESISTOR	
R8	QRSA08J-474YN	RESISTOR	
R9	QRSA08J-122YN	RESISTOR	
R10	QRSA08J-122YN	RESISTOR	
R11	QRSA08J-334YN	RESISTOR	
R12	QRSA08J-223YN	RESISTOR	
R13	QRSA08J-223YN	RESISTOR	
R16	QRSA08J-223YN	RESISTOR	
R29	QRSA08J-333YN	RESISTOR	
R45	QRSA08J-271YN	RESISTOR	
R46	QRSA08J-102YN	RESISTOR	
R47	QRSA08J-102YN	RESISTOR	
R50	QRSA08J-623YN	RESISTOR	
R51	QRSA08J-101YN	RESISTOR	
R52	QRSA08J-820YN	RESISTOR	
R53	QRSA08J-102YN	RESISTOR	
R54	QRSA08J-223YN	RESISTOR	
R55	QRSA08J-183YN	RESISTOR	
R56	QRSA08J-273YN	RESISTOR	
R57	QRSA08J-222YN	RESISTOR	

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
R58	QRSA08J-222YN	RESISTOR	
R59	QRSA08J-222YN	RESISTOR	
R60	QRSA08J-103YN	RESISTOR	
R61	QRSA08J-103YN	RESISTOR	
R68	QRSA08J-393YN	RESISTOR	
R69	QRSA08J-393YN	RESISTOR	
R71	QRSA08J-104YN	RESISTOR	
R72	QRSA08J-102YN	RESISTOR	
△ R73	PU52108-150	POSISTOR	
△ R74	OR PU52108-150T	POSISTOR	
R75	QRSA08J-273YN	RESISTOR	
	QRD182J-183	RESISTOR	
C3	QCFA1HZ-103	CAPACITOR	
C4	QCFA1HZ-103	CAPACITOR	
C5	QETC0JM-476	E CAPACITOR	
C6	QCY81EK-223ZL	CAPACITOR	
C7	QCYA1HK-152	CAPACITOR	
C10	PU59758-105	CAPACITOR	
C11	PU59758-105	CAPACITOR	
C14	QCYA1HK-152	CAPACITOR	
C15	QCYA1HK-152	CAPACITOR	
C18	PU59758-105	CAPACITOR	
C19	PU59758-105	CAPACITOR	
C21	QCSA1HJ-390	CAPACITOR	
C22	QCYA1HK-152	CAPACITOR	
C24	QCFA1HZ-103	CAPACITOR	
C25	QETC1HM-104	E CAPACITOR	
C26	QCFA1HZ-103	CAPACITOR	
C27	QCSA1HJ-151	CAPACITOR	
C28	QCSA1HJ-271	CAPACITOR	
C29	QCSA1HJ-391	CAPACITOR	
C31	QETC0JM-476	E CAPACITOR	
C32	QCFA1HZ-103	CAPACITOR	
C50	QCFA1HZ-103	CAPACITOR	
C51	QCFA1HZ-103	CAPACITOR	
C52	QCFA1HZ-103	CAPACITOR	
C53	QETC1CM-476	E CAPACITOR	
C54	QFN31HJ-223	M CAPACITOR	
C55	QCC11EJ-103	CAPACITOR	
C56	QETC1HM-105	E CAPACITOR	
C57	QCSA1HJ-470	CAPACITOR	
C58	QCFA1HZ-103	CAPACITOR	
C59	QCFA1HZ-103	CAPACITOR	
C60	QCSA1HJ-100	CAPACITOR	
C61	QETC1AM-476	E CAPACITOR	
L1	PU48530-101K	PEAKING COIL	
L2	PU59152-390J	PEAKING COIL	
L3	PU59152-221J	PEAKING COIL	
L4	PU48530-101K	PEAKING COIL	
L15	PU59153-101K	PEAKING COIL	
L16	PU59152-5R6J	PEAKING COIL	
L17	PU59152-180J	PEAKING COIL	
ETH1	PQ43375-1-1	EARTH PLATE	
ETH2	PQ40433-2	EARTH LUG	
HD1	PQ42955	PWB BKT	
SCW1	DPSP2606Z	SCREW, X2	
SCW2	DPSP2606Z	SCREW	
SLD1	PU60153-2-1	SHIELD CASE	
SLD2	PU60154	SHIELD PLATE	

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SPC1	WBS2600Z	T.L.WASHER
	TP1	PU56008	TEST-PIN, X3, (TP1,TP3,GND)
	CN1	PU56258-10	CAP HOUSING
	CN2	PU58844-5	CAP HOUSING
	CN3	PU58844-2	CAP HOUSING
	CN4	PU58844-4	CAP HOUSING
	CN5	PU58844-8	CAP HOUSING

 * 20. FLYING ERASE BOARD ASSEMBLY <46> *

PWBA PB30045B FLYING ERASE BOARD ASSY

Q1	2SA933S	TRANSISTOR
Q2	2SC1741S(QR)	TRANSISTOR
Q3	2SA933S(Q)	TRANSISTOR
Q4	2SD639R	TRANSISTOR
Q5	2SD639R	TRANSISTOR

D1	UZ8.2BSC	ZENER DIODE
D2	1SS133	DIODE

R1	QRD161J-473	RESISTOR
R2	QRD161J-472	RESISTOR
R3	QRD161J-222	RESISTOR
R4	QRD161J-473	RESISTOR
R5	QRD161J-183	RESISTOR
R6	QRD161J-104	RESISTOR
R7	QRD161J-121	RESISTOR
R8	QRD161J-104	RESISTOR
R9	QRD161J-121	RESISTOR

C1	QCVB1CN-103	CAPACITOR
C2	QCC11EJ-123	CAPACITOR
C3	QCSB1HJ-560	CAPACITOR
C4	QCB81HJ-820	CAPACITOR
C6	QCB81HJ-820	CAPACITOR
C8	QCT25UJ-181	CAPACITOR
C9	QCT05UJ-330	CAPACITOR

L1	PU48530-560J	PEAKING COIL
L2	PU48530-3R3K	PEAKING COIL
L3	PU48530-3R3K	PEAKING COIL
L4	PU59152-101J	PEAKING COIL

T1 PU56175 S. TRANS

SLD1	PU60408	SHIELD CASE
SLD2	PU60409	SHIELD COVER
SLD3	PU60410	SHIELD PLATE

CN1	PU58844-3	CAP HOUSING
CN2	PU58844-2	CAP HOUSING
CN3	PU58844-2	CAP HOUSING

 * 21. DECK TERMINAL BOARD ASSEMBLY <51><53> *

PWBA PB20013C-03 DECK TERMINAL BOARD ASSY

-DECK TERMINAL BOARD ASSEMBLY <51>-

#	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PB20013C1	DECK TERMINAL BOARD ASSY <51>
	R1	QRD181J-151	RESISTOR
	R3	QRD181J-331	RESISTOR
	PHS1	PU60271	PHOTO INTERRUPTER
	CN1	PU59933-17	WIRE TRAP

-REC SAFETY BOARD ASSEMBLY <53>-

PWBA3 PB20013A3 REC SAFETY BOARD ASSY <53>

S1 PU58644-1-3 REC SAFETY SWITCH

 * 22. RELAY BOARD ASSEMBLY <52> *

PWBA2 PB20013A2 RELAY BOARD ASSY

LC1	PU59736-223	N FILTER
LC2	PU59736-223	N FILTER

WR2 PW30113-G0ABZ62 PARALLEL WIRE
 OR PW30118-G0ABZ62 PARALLEL WIRE

 * 23. END SENSOR BOARD ASSEMBLY <54> *

PWBA4 PB20013A4 END SENSOR BOARD ASSY

Q1 PN268R-NC PHOTO TRANSISTOR

HD1 PQ31047 E.S.HOLDER

CN1 PU59945-102 WIRE SOCKET

 * 24. CASSETTE HOUSING BOARD ASSEMBLY <56> *

PWB1 PB30043 CASSETTE HOUSING BOARD

Q1 PN268R-NC PHOTO TRANSISTOR

R1 QRD162J-471 RESISTOR

PHS1 PU58879 PHOTO INTERRUPTER

CN1 PU58844-106 CAP HOUSING

